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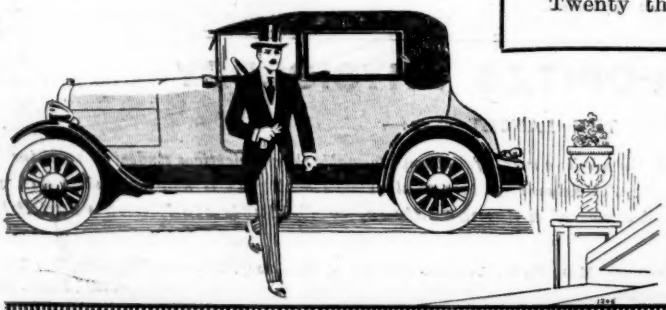

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The Harveian Oration

ON THE

BIRTH AND GROWTH OF SCIENCE IN MEDICINE.

Delivered before the Royal College of Physicians of London on Oct. 18th

BY SIR FREDERICK W. ANDREWES, O.B.E., M.A., M.D. OXF., F.R.C.P. LOND., F.R.S.,

PROFESSOR OF PATHOLOGY, UNIVERSITY OF LONDON; PATHOLOGIST AND LECTURER ON PATHOLOGY, ST. BARTHOLOMEW'S HOSPITAL.

A Harveian orator, in choosing the subject of his discourse, hesitates between two paths. He may seek to elucidate some point in the founder's life or work which has escaped the notice of previous orators, or he may take some wider theme and speak of the spirit in which Harvey carried on his labours. I have not the knowledge to attempt the first of these alternatives, and when, Sir, you did me the great honour of nomination as this year's orator it was clear to me that I must adopt the second. Many of my predecessors in the office have been more distinguished pathologists than I am, but I believe that this is the first occasion on which the honour has been conferred upon one who is not engaged in ordinary medical practice, but who is a pathologist by profession. I have to thank you, Sir, not only on my own behalf, but even more in the name of the subject which, in all humility, I represent.

The Harveian orator is enjoined to commemorate the various benefactors of this College, but considerable latitude is by custom allowed him as to the manner in which he fulfils this duty. Our College is rich in former gifts of books, pictures, silver, and other valuable and beautiful possessions; our endowments in houses and land have enabled our foundation to carry out its work with ampler means. To all those who have conferred such benefactions upon the College our grateful thanks are due, and if to-day I do not formally recite the long list of names it is because I think that the founder of this oration would himself have been the first to recognise that our intellectual heritage is a treasure of greater worth than material possessions. The great men of the past to whose labours we owe the development of medical science have been benefactors of this College, and of all that it represents, in a nobler sense. Harvey was one, and not the least, among them, and I conceive that I cannot more fittingly honour his memory than by devoting this oration to the inward spirit which has animated the progress of medical science. Many great names stand along the centuries, marking the toilsome and broken road by which our science has reached its present position, and Harvey is worthy of his company.

THE POSITION OF MEDICINE AMONG THE SCIENCES.

It is natural that as a pathologist I should take the more purely scientific aspect of medicine as the subject of my discourse, and it will be proper, in the first place, to consider the position which medicine occupies amongst the sciences. We are accustomed to speak of the "art and science of medicine," perhaps without reflecting on where the art begins and the science leaves off. A body of facts in any branch of knowledge, however thoroughly their truth has been established, does not of itself constitute a science. Science lies in the way the facts are treated. They need to be classified and viewed in their mutual relations; then, by appropriate reasoning, it is sought to formulate the general laws which govern the province of nature studied. The aim of science is to discover the "Laws of Nature," and in its truest, though narrowest sense, it is the pursuit of this knowledge for its own sake, irrespective of any practical use to which it may be put.

The primary aim of medicine is the practical one of healing the sick or preventing disease, and therefore, in the narrower sense, medicine is not a science but an art. Physiology, pathology, and pharmacology are sciences in the strictest sense; medicine is the art of applying the laws established by these sciences to the prevention or cure of disease. More than this, it is the very human art of treating the patient as well as his disease. But in a broader and surely a more natural sense we may regard medicine as a science. Pathology may, it is true, be pursued as an abstract subject, but in real life it is inseparable from medicine. Treatment and prevention are so intimately based upon a right understanding of the nature of disease and of the laws which govern its course that I refuse to separate pathology and medicine. It has too long been the fashion to limit the sphere of pathology to the dead-house and the laboratory; its field is equally at the bedside, and, indeed, I would assert that there is no method of studying the natural history of disease which pathology may not claim as its proper province. By Harvey's injunction I am to admonish you to seek out the truths of Nature by observation and experiment. These are two different ways of pursuing a subject, and, indeed, the concrete sciences have been divided into the "observational" and "experimental"; anatomy is an observational science, physiology an experimental one. The observational sciences long preceded the experimental, and in pathology and medicine, which partake of the nature of both, the experimental method is of late growth.

THE CONDITIONS FOR SUCCESSFUL SCIENTIFIC DEVELOPMENT.

My aim is to trace, so far as I may in the allotted span of time, the influences which have governed the growth of our knowledge of disease; to pursue them to their beginnings rather than to record their final results. I cannot, indeed, hope to say anything new; I can only endeavour to place before you the facts to be gathered from literature in the way in which they group themselves in my own mind. In the first place, let me consider the conditions necessary to the successful development of a science.

The foremost is *liberty of thought*. Unless man is free to reason from his facts, unhampered by deference to received opinion or tradition, real progress in science is impossible. The history of medicine abounds in evidence of this truth; indeed, Harvey's demonstration of the circulation offers a striking instance. The second condition is *accuracy of observation*, with patient accumulation of the facts which form the building stones of science. The third, widely different from the preceding, is the gift of *imagination*, which can frame a tentative explanation of the observed facts—a rarer faculty in the chastened form demanded by science and, perhaps, a more dangerous one. The two conditions last named are seen united only in exceptional men; they were so in Harvey, who has left a clear record of the mental processes which led him to the truth. In the fourth place comes the verification of hypothesis by *experiment*, in which the conditions are so controlled as to allow of more convincing conclusions than chance observations permit. And governing the whole chain of thought from its first inception there must be present that capacity for severely correct thinking, the rules for which are embodied in *logic*. Let us now see how the history of medical science sheds light on the development of these fundamental conditions.

History has been said to be the story of the influence of great men. It is true that we can associate the more striking advances in medical science with the names of certain individuals who stand out as landmarks in its development, but the course of history is surely swayed by influences deeper than this. A great man is the product of his times. Harvey would not have discovered the circulation had it not been for the labours of his predecessors and the intellectual atmosphere in which he lived. The great man is he who has the vision to combine the scattered facts into a harmonious whole and who can carry conviction to others by the force of his reasoning. I shall have to commemorate such great names standing along the history of medical science, but I shall also be obliged to consider the conditions which produced them.

In his suggestive little book, entitled "The Revolutions of Civilisation," Professor Flinders Petrie has pointed out that culture is an intermittent phenomenon. No civilisation in the past has proved permanent, and he estimates the average duration of any given period of culture at about 1500 years; in Egypt he traces eight such periods.

The downfall is usually brought about by the invasion of a people of lower culture but greater virility, and from the mixture of the old and the new races a new civilisation is born, but only after an interval of relative barbarism—a sort of incubation period lasting some hundreds of years. The first phase of the new culture is hampered by imperfect traditions of the past; it is the stage of archaism in art, and in science it is marked by blind reliance on received opinion. In time these trammels are shaken off and the new people enters upon the unfettered exercise of its inborn genius: it acquires intellectual liberty, and now comes the phase of maximum fertility in every branch of human enterprise, lasting perhaps but a century or two, and followed by gradual decadence till the over-ripe civilisation is ready to fall. That this has been the course of all the civilisations known to us admits of no dispute, and Professor Flinders Petrie adds the important observation that there is a fairly regular sequence in the development of the various branches of human activity. Art is the first to reach its highest point, and notably sculpture and architecture. Literature follows later, while science is last of all in its development, and may be delayed for 500 years or more after sculpture has reached its acme. Our own civilisation offers confirmation of the truth of these propositions. Science is still rapidly advancing with us, but as a race we are now quite incapable of Salisbury Cathedral, of Magdalen tower, or of King Henry VII.'s Chapel. Consider the recent work at Cambridge on the structure of the atom and then go and look at the statue of Sir Wilfrid Lawson on the Embankment.

But, with all this intermittence, there is none the less an upward movement of civilisation as a whole. Each new period of culture is coming to found itself more and more on that which has preceded it. In early times a civilisation, when it fell, passed more or less utterly away; its successor had to begin again from the beginning. The invention of writing has profoundly affected the degree to which one period can influence that which comes after it. In spite of all that has been lost our debt to classical antiquity is one that never can be measured, and with the art of printing and the distribution of books over the world it would seem impossible that any important element in our own culture should be lost to our successors when our civilisation perishes in its turn.

THREE GREAT PERIODS OF CIVILISATION.

These considerations are of no little significance in relation to the development of medical science. We are aware of three great periods of civilisation in Europe during the past 5000 years—the Mediterranean or Minoan, with its headquarters in Crete from 3000 to 1200 B.C.; the Classical, of which Greece was the intellectual fountain head; and the Modern or Western, in which we are still living.

We know too little of the first of these, at least from the aspect of science, to enable me to say much about it. Medical science, so far as we are aware, began with the ancient Greeks. This statement requires justification, for we know that the older civilisations of Egypt and Babylonia had some acquaintance with medicine, and attained a certain degree of surgical and therapeutic skill. I have spoken of science as an endeavour to formulate the laws of nature, and as the pursuit of knowledge for its own sake. Now the Egyptians, as Professor Burnet has pointed out, had invented certain practical rules of mensuration, amongst others one which involved the properties of the triangle with sides of 3, 4, and 5 units respectively, but they used their rules empirically. The Greeks took this knowledge and began to study the properties of numbers for their own sake; Pythagoras proved the abstract proposition which we know as Euclid I. 47. The Greeks originated the science of mathematics. Similarly, the Babylonians amassed data concerning the heavenly bodies and arrived at a certain periodicity of eclipses, but they made no attempt, so far as we know, to formulate the laws governing the movements of the sun, moon, and stars. The Greeks absorbed the Babylonian data and began to reason about them; in a few centuries they found out that the earth was round and floated in space, and surmised that it was only a member of a larger system of worlds; they not merely observed, but succeeded in explaining eclipses. They thus founded the science of astronomy. In the same way, as I propose to relate, they laid the foundations of medical science.

The way in which Greek history is usually taught in schools is, to my mind, a deplorable thing. If one takes up a primer on the subject one finds it a lamentable record of petty strife and treachery, redeemed, indeed, here and there by some noble and heroic action, but conveying little of the marvellous achievements of the Greeks in the realms of thought and art.

What does the Peloponnesian War matter in comparison with the invention of mathematics and logic, with the rise of democracy, the development of the drama, or the idealism of Greek sculpture? By all means teach the schoolboy what Marathon and Salamis meant for the future of European civilisation, but teach him, too, the significance of Hellenism in art, literature, and science. The political failures and downfall of the Greeks may well be relegated to a tragic addendum, to warn him that no intellectual brilliancy and freedom can make a nation long successful in the absence of unselfishness and good faith.

I take it that few things have ever happened in the world so wonderful as the relatively sudden intellectual development of the ancient Greeks. Ethnologists tell us that a peculiarly happy accident of racial fusion was largely accountable for their genius. Right through the Bronze Age the dominant race in the Ægean had been that which developed the so-called Minoan culture—a people, small in stature, active, and intelligent, and with a highly developed artistic talent. Their civilisation was overwhelmed by successive waves of migration from the North; the invaders were of Aryan origin, and represented many different tribes. The Achæans, known to us from the pages of Homer, were amongst the earlier comers; the Dorians came last, and partly drove out the already half-mingled Achæan and Mediterranean races. The Dorians seem to have contributed little to the intellectual development of future Greece; they remained more or less apart—a military people, of which the Spartans were a type. The effective elements were the Achæan and Mediterranean races; the first contributing to the mixture discipline, order, and self-control, while intellectual acuteness and artistic gifts were brought by the Southern race—a fertile combination for the growth of science. There was a long period of darkness and barbarism, lasting some 400 or 500 years, a dreadful time about which history is silent. In the wreck of the old culture even the art of writing seems to have perished and a new alphabet had to be brought into use. But by 800 or 700 B.C. the new civilisation began to dawn, and in the realms of thought the dawn was earliest not on the mainland of Greece but in the more settled countries round the Ægean occupied by the Ionian Greeks.

Thales of Miletus.

So far as we are aware the earliest attempts at science began in Ionia, some six centuries before Christ, and the name which I would first commemorate as a spiritual benefactor of this College is that of Thales of Miletus. I might have chosen Empedocles or Pythagoras, but we may let Thales, as the first of the succession of early Greek thinkers, stand as the prototype of the group of men who laid the foundations upon which science was to be built by future generations. Doubtless they had acquired what they might of the lore of older civilisations, but they seem to have been the first to pursue abstract knowledge. Till their day men had been content to accept any foolish myth about the nature of the world and of the things they saw around them. The service which Thales and his successors rendered to mankind was that they rejected all fabulous tales and began to think for themselves how things had become such as they saw, definitely reaching out after the laws which they felt sure must govern nature. Their great contribution to science was to establish that atmosphere of intellectual liberty which rendered science possible. It says much for the liberal spirit of that age that these men, who broke with all the cherished traditions of the past, were not as a rule reviled for impiety but received universal honour; Thales was accounted one of the Seven Wise Men of Greece.

It is easy for us to smile at the crudity of some of the attempts of these early philosophers to explain nature. Yet they early realised the permanence and indestructibility of matter, and one of their chief preoccupations was the search after the primary substance out of which they conceived everything to arise. Some identified it with water, some with air; and Empedocles, in the fifth century B.C., is credited with formulating the doctrine of the four elements—earth, air, fire, and water—which was to dominate scientific thought for more than a thousand years. The obvious antagonism between heat and cold, dryness and moisture, early led to the doctrine of "opposites" which became one of the chief tenets of Greek medicine. Even the atomic theory can be traced back to Leucippus of Miletus in the fifth century B.C. This conception, elaborated some four centuries later in the well-known poem of Lucretius, is an interesting example of a hypothesis reached by sheer thinking, but remaining barren for 2000 years until established by the experimental method in the hands of Dalton. That marks the difference between the science of the armchair and that of the laboratory.

EARLY GREEK CONTRIBUTION TO MEDICAL SCIENCE.

But let me now consider what the earlier Greeks did for medical science. Medicine of a sort and rude surgery must have been transmitted even through the dark ages, handed down, it is said, by special families

the Asklepiadæ, just as the epic tradition was passed along by the Homeridæ. Certain rules of surgery and the practices of blood-letting and purgation are known to be of immemorial antiquity, but for the most part the medical practice of those times seems to have been bound up with fetish worship and superstition. There is no evidence that Egypt had any true medical science to impart, and our knowledge of Minoan medicine is limited to the single fact that in the great palace at Cnossus there existed a system of sanitation so good that it was never equalled till the reign of Queen Victoria. We may be quite sure that the inquisitive and receptive Greek mind was quick to pick up what it could from the older civilisations, and then, in accordance with its peculiar genius, it proceeded to develop it out of all recognition. The greatest achievements of the Greeks were not in medical science; other sciences had to develop before medicine could rest upon a proper foundation, but what they did for medicine was no small thing.

Their physicians were usually philosophers, and their philosophers speculated as freely about the functions of the body as they did about the universe. Their physiology naturally reflected their views on science in general. The school of Empedocles identified his four elements with the hot and the cold, the moist and the dry, and loss of balance between these opposites was held to produce disease. Had such crude speculations been all, medicine might have owed little to the earlier Greeks. But there was much more. The Greeks were acute observers, and they began to study and to record the phenomena of disease, grouping and classifying according to the lights of the time; thus medicine entered upon its first scientific stage; it became an observational science. More than this, just as in other matters the philosophers had put away the myths and fairy-tales of their ancestors, so, too, in medicine they rejected the magic and fetish worship which had hitherto formed so large a part of practice. This was one of the greatest services rendered by the Greeks to medical science. Not that medicine became altogether dissociated from religion. Æsculapius was worshipped at numerous temples, and thither the sick were brought to receive such benefit as they might from the rites of the god. But at such health resorts they were also subjected to other influences—careful diet, pure water, rest, and cheerful associations—and when improvement occurred the physicians had the acuteness to perceive that this simple treatment had probably more to do with the result than the religious rites.

Hippocrates of Cos.

This brings me to the second name which I naturally commemorate to-day—that of Hippocrates of Cos—the first great clinician of whom we have any knowledge, and one whose name will always be associated with the phase which Greek medicine had now reached.

When Hippocrates was born, about 460 B.C., observational medicine had attained a considerable pitch of excellence. He, doubtless, imbibed the teachings of other good physicians who had gone before him, but the veneration in which Hippocrates was held by the Greeks themselves assures us that he was a man of outstanding character and attainments. We can, however, judge of him more directly. It is certain that only a small part of the Hippocratic treatises which have come down to us are from the pen of the master himself, but we may reasonably take them, as a whole, to represent his teaching, and they give us a fair idea of the stage at which the best Greek medical science had arrived in the fifth century B.C. It was a simple and rational medicine based on careful clinical observation and on a watchful study of the results which followed hygienic treatment. The healing powers of Nature formed a leading tenet of the Coan school; we may almost regard Hippocrates as the founder of sanatorium treatment. Perusal of those of the Books of Epidemics which are most certainly by Hippocrates himself shows that he was an admirable case-taker; in the light of our present knowledge we can readily make a diagnosis from many of his descriptions. His medicine shows, of course, the natural limits of a purely observational science; it knows little of anatomy and less of physiology; its crude pathology is based on the doctrine of "opposites"; the idea of experiment as a means of investigation has not yet arisen. Yet in spite of this the school of Cos is a landmark in the history of rational medicine. Throughout its writings there breathes a certain lofty and independent spirit, so that we feel that we must reverence Hippocrates not only as a great physician but as a great gentleman.

We look back to Athens, in the fifth and fourth centuries B.C., as the golden age of Greece and the fountain head of later European thought. It is the more disappointing to find that Athens itself made little direct contribution to medical science; the Athenians of those centuries were more concerned with metaphysical speculations than with science, until, indeed, we come to Aristotle. Nevertheless, it would be a grave mistake to suppose that Athens did nothing for medicine, for at this period were firmly founded some of the abstract sciences and, above all, mathematics and logic, upon which the future development of the concrete sciences ultimately rested. I must not dwell on Aristotle, for he has been the theme of more than one Harveian oration, and rightly so, for his influence on Harvey was immense; probably no one man has so profoundly affected the thought of succeeding generations. Logic was essentially his creation; his works remain a monument to the genius of the Greeks, not only for careful observation and daring speculation, but for correct thinking. I have at times thought it might be well if this College insisted on a course of logic for the Diploma of Membership.

The gradual decay in the glory of ancient Greece is usually attributed to the known historical facts—to their petty quarrels and their incapacity for combining amongst themselves. There was, probably, also a deeper cause; the racial fusion to which they owed their origin had passed its period of maximum fertility, and the Greeks but fulfilled the doom which ultimately overtakes every civilisation. But Hellenism did not die; what the Greeks had achieved remains as a quickening influence for all time.

In medical science the centre of interest now shifts elsewhere, and especially to Alexandria, but it remains Greek. Alexandrian culture represents a sort of continuation of that of Athens, though, perhaps, in comparison smacking somewhat of Wardour-street. The great creative age in art and poetry had gone by; it was a period of imitation in art, and in literature largely a time of scholiasts and commentators on the better work that had been done before. But here we have an excellent illustration of Flinders Petrie's dictum that in each period of culture science reaches its prime long after art and literature have begun to decline. For all the branches of science then extant continued to advance in Alexandria. I need hardly recall how mathematics and astronomy flourished under the Ptolemies, and in medical science the Alexandrian school maintained its premiership for many hundred years.

Anatomy and physiology form a necessary basis for medical science, and much as the earlier Greeks had done for medicine they had lacked any adequate knowledge of these subjects. The later Greeks proceeded to remedy this defect. The practice of dissection became established, and anatomists must look back to the Alexandrian school for the foundation of their science. I must pass over Herophilus and Erasistratus and commemorate the later Greek school in the person of its most distinguished alumnus, Galen.

The gifts of Rome to Europe were law, order, and settled government; the Romans left us a stately literature, but to science, as to art, they made little original contribution. If we except the elder Pliny's "Naturalis Historia," itself largely a compendium, Rome produced no great scientific work. Roman medicine, like its art, was wholly Greek in origin; its great physicians received their training in Greek schools, and Celsus, the best-known writer on medical subjects, was not himself a practitioner of medicine. Thus, though we associate Galen with Rome, I must commemorate him as a Greek—the last and in many ways the greatest of the Greek physicians.

Galen of Pergamum.

Nearly 600 years had passed between Hippocrates and Galen, and when we compare the two it must be remembered that Galen had the advantage of that 600 years of medical experience. It gave him a wider outlook and thus made him a better physician, though I conceive Hippocrates, considering his times, to have been the bigger man. I do not propose to dwell on Galen's eminence as a physician, though he stood far above all others of his age. His real claim to immortality may be put into a few words: he was the first to make systematic use of the experimental method in medicine, and he founded the science of physiology. He probably owed more to his studies in Alexandria than to his native school of Pergamum, for there he had the opportunities of human dissection which were denied to him later in Rome, and there, too, he must have gained his first insight into the possibilities of the experimental method. To us it seems a marvel that a man of Galen's ability, an adept in the methods which we know he used, should have failed to apprehend the great fact of the circulation of the blood, for he came very near it. History is full of instances in which erroneous assumptions, so firmly held that their truth is never called in question, blind men to a truth which would otherwise be obvious. It was so with Galen, and, did we know it, it is probably true of ourselves. Nevertheless, his experimental discoveries in other regions of physiology, and particularly in the domain of the nervous system, entitle him to be called the father of that science. Galen must also be credited with a great advance in

pathology. The earlier Greeks had regarded internal medicine from a purely humoral aspect; the later Greeks began to recognise affections of certain definite organs, but Galen developed this conception beyond any of his predecessors. His latest treatise, "De Locis Affectis," deals with the morbid conditions of the different organs as judged from the symptoms of the patient. Dr. Payne has justly remarked that, had Galen been able to make post-mortem examinations, he might have founded morbid anatomy. It so happened that Galen was one of the most prolific writers who ever lived, and by devious ways much of what he wrote has come down to us. It is no wonder that the works of so eminent a man should have come to occupy in later ages a position in medicine almost like that of the Bible.

With Galen we come to the end of the great age of classical civilisation, and it will be fitting, before leaving it, to summarise what Greek genius had accomplished in medical science. An atmosphere of intellectual liberty had been established by the Greeks, essential to the birth and growth of science; they had developed the love of knowledge for its own sake. Their shrewd observation had transformed medicine from a medley of traditional empiricism and superstition into a natural science; they freed it from magic and laid the foundations of a rational treatment of disease. Towards the close of their epoch they devised the experimental method and used it to found the science of physiology. Indirectly medicine, like the other sciences, owes them the laws of clear thinking and the development of mathematics and mechanics. Could I have selected four names from antiquity who more fully deserve our gratitude as benefactors of this College than Thales, Hippocrates, Aristotle, and Galen?

THE DARK AGES.

When the Minoan civilisation passed away the Greeks had been compelled to begin again almost from the beginning. There was no such complete break between the classical period and our modern civilisation; much was handed on by direct tradition, and vastly more by written manuscript. Nevertheless, after the fall of the Roman Empire Europe had to be remade, and to pass through its dark ages before the dawn of a new culture. The new mixture of races seems to have been incapable of intellectual achievement till the ordained incubation period was over, and that period was at its darkest from the fifth to the tenth centuries A.D. Art was at a low ebb and the culture of classical times was largely forgotten. The great libraries were neglected or in some cases destroyed, and an immense amount of the literature of Greece and Rome perished beyond recall. Medicine shared the fate of the other sciences, and what was not forgotten became debased by admixture with Eastern magic and superstition.

The dominant power in Europe during this period was the Church, and although its conservatism had a wholly deadening influence as regards the advance of science it did much to preserve the culture of classical times. The mediæval monasteries were the storehouses of learning, and though the study of pagan writings was not encouraged there was nothing to prevent a good monk of literary tastes from making copies of ancient manuscripts. This was one channel by which some knowledge of classical medicine was handed down the dark ages, but there was another of even greater importance. In the seventh century occurred the last of the four known Arab migrations which have overwhelmed neighbouring peoples; it spread not only over Western Asia but all round the Mediterranean. Whatever may have been the primitive culture of these Arab invaders, they presently acquired a high degree of civilisation. They were a keen-witted race, quick to assimilate the culture with which they came in contact, and this was largely Greek in origin. For some hundreds of years the Moorish Empire in Spain was far in advance of the rest of Europe in literature, in science, and in medicine. The best medical works of classical antiquity were translated into Arabic, and it is by this strange route that much has come down to us which would otherwise have been irretrievably lost. The Arabs were skilled in criticism and dialectics, but they were not great original thinkers. They left us descriptions of certain diseases unknown to the ancients, such as measles and small-pox, but medical science owes them relatively little. Their chief share in medicine was to absorb and transmit the knowledge of the Greeks.

THE RENAISSANCE.

An end came at last to the dark ages of Europe, and in one sphere of activity after another the fetters of the past began to be shaken off. Art was the first to revive; sculpture and architecture almost reached the zenith of their development in the thirteenth century; painting took two centuries longer to free itself from archaism. Intellectual freedom was still longer delayed; from the twelfth to the fifteenth century there was learning in plenty, but it was study devoted to what had been written in the past, not the free exercise of the mind in fearless inquiry after truth. It is easy to blame the Church for this exclusive devotion to tradition and dogma, but the Church could not prevent the Renaissance when the times were ripe; we should rather regard the fact, with Flinders Petrie, as part of the ordained cycle in the evolution of a civilisation. Medicine reflects the spirit of these centuries; the traditions of the past were still supreme, and Galen was the god of the medical world. Men felt him to have been a better man than themselves, as in truth he was, and it was enough that Galen said this or that, or that his writings could be interpreted in such and such a sense, and there the matter ended.

And then, in the fullness of time, after more than a thousand years of intellectual slumber, men again began to think for themselves, just as the Ionian Greeks had done 20 centuries before. The Renaissance was at first literally a revival of learning, due to the renewed study of the Greek language and the discovery of much of the classical literature which had been hidden away in the libraries of the East. It is outside my province to discuss this great movement which spread from Italy to England in the fifteenth and sixteenth centuries, except in so far as it influenced medical science. The first effect of the revival was to strengthen the position of Galen. It must be remembered that he was but imperfectly known in mediæval times. Much of his work had been lost and as for what remained, it is unlikely that all the spirit of the original would be conveyed by Greek writings, translated into Arabic, and later rendered into corrupt Latin. But with the revival of Greek in the fifteenth century his original writings became accessible and manuscripts hitherto unknown came to light. It became the aim of the scholars of the time to translate these works into polished Latin for the benefit of those unacquainted with Greek. Amongst the medical humanists, as they are termed, was the founder and first President of this College. There is no more honoured name in scholarship than that of Linacre, but it is instructive to note the difference between his mental attitude and that of Harvey, little more than a hundred years later. Linacre stands for the revival of learning, Harvey for the intellectual quickening that revival was to engender. The avowed aim of the medical humanists was not the advance of medical science but a return to the uncorrupted knowledge of the Greeks; the thought and science of antiquity were still held so immeasurably superior to anything that modern times could produce that no advance was contemplated. But the seed was sown. Greek literature was the product of an original creative activity and a mental freedom to which Europe had long been unaccustomed. Men could not study it without at the same time drinking in something of the spirit in which it had been conceived and which animates it for all time. This was our true heritage in the Renaissance, and once again imbued with this spirit men felt at liberty to ask whether the ancients were always right and to criticise and test their statements. The reign of mere authority came to an end, and science recommenced that advance which has continued to the present day.

The first science to bear new fruit was anatomy. It was in Italy that the resurrection began, and the book written by Vesalius on "The Structure of the Human Body," published in 1543, set the seal upon the new method—the appeal to fact instead of to dogma. But the story of the rise of anatomy has been told so often and so well in Harveian orations, especially in relation to the organs of circulation, that I need not dwell on it. We all know that the truth as to the pulmonary circulation was first ascertained, while it was reserved for Harvey to demonstrate the systemic circuit. The method of experiment as an adjunct to observation, instead of being delayed for hundreds of years, as it had been amongst the Greeks, was now, thanks to Galen, an instrument ready to hand. And thus it came about that when a man arose, deeply imbued with the true spirit of science and capable of using this instrument with intelligence and an open mind, his study of the circulation was at once rewarded by a discovery of capital importance.

William Harvey.

One does not commemorate the name of William Harvey in this oration merely from a sense of duty; he truly stands as one of the landmarks in the history of medical science. His was the first scientific discovery of absolutely first-rate importance to be made by the application of the methods and spirit, now revived from ancient times; he possessed the vision, the power of imagination, as well as the needful industry and patience in gathering his facts and devising his experiments.

Harvey has left us two treatises of unequal greatness. The "De Motu Cordis" has no need of any introductory disquisition on scientific method, for it itself is the method incarnate. It is the mature work of a master who is sure of his ground; it sweeps us along from one short chapter to another, each filled with accurate observation and close reasoning, so that no doubt or hesitation is possible to the reader. And we feel that this is because the methods open to Harvey had been adequate to solve the problem at issue; the times were ripe for his discovery.

But he also essayed to solve other biological problems, for which his means were not adequate, and the "De Generatione," which he was reluctant to publish, is reading of a different kind. The most instructive part of this treatise is perhaps the introduction on scientific method, "Of the Manner and Order of Acquiring Knowledge." Here Harvey in his later age sets forth the principles which had guided him, with Aristotle as his leader, in his life's work, and we realise how truly scientific were his methods. But though these methods enabled him to correct many of the errors of his predecessors, and though the "De Generatione" is full of accurate and curious observations and good reasoning, in comparison with the "De Motu Cordis," it leaves us cold. No great conclusion emerges; the real problems of generation remain unsolved. And no wonder; Harvey had no microscope. But the methods and reasoning he employed, his freedom from prejudice, his modesty—these remain a guiding light to future generations to point out the path by which science should be pursued.

With Harvey we feel that medical science has fairly entered that path. The conditions which I ventured to lay down at the beginning of this discourse as essential to scientific progress—freedom of thought, accuracy of observation, imagination, experimental verification, and logical reasoning—all are exemplified in Harvey's work. I have endeavoured to trace the birth and growth of medical science up to this point, and I fear that, in the attempt to cover so wide a field in the brief hour allotted me, I may have incurred the charge of superficiality. I must be content if the sketch, though superficial, is not wholly wanting in perspective. I have intentionally dwelt upon the earlier phases of scientific medicine, for my theme has been the spirit which brought it to birth rather than the triumphs of its maturity.

If you are not weary of somewhat trite observations, I will conclude by passing in brief review some of the influences which, since Harvey's day, have been most fruitful in furthering the growth of medical science. However admirable the spirit of inquiry, medicine can only employ the means at its command, and of all sciences medicine is, perhaps, the most complex, the most dependent upon other sciences for its development. Hence it is from outside medicine that the chief stimuli to progress in medical science have come. In saying this I would not be thought to undervalue the vast internal progress which has been brought about by clinical study. One has but to recall the mighty name of Sydenham to realise what a pure clinician can accomplish. Sydenham would have none of physiology or pathology, and we may almost wonder whether one so disdainful of science would have been pleased to know that he was the founder of epidemiology.

There is room for difference of opinion as to the impulses from external sources which have had the most far-reaching effects upon medicine, but I would name four as of exceptional importance. They are the invention of the compound microscope, the development of chemistry, the acceptance of the doctrine of evolution, and the discovery of the relation of micro-organisms to disease. The microscope was invented in Holland early in the seventeenth century, but its possibilities as an aid to anatomy were not at first grasped, and it was not till after Harvey's death that Malpighi actually saw the capillaries and the contrary direction of the blood-flow in arteries and veins. The rise of histology from that time forward has transformed our ideas of the structure of the body, and with each improvement in the microscope our horizon has widened. We have passed from the organ to the units of which it is built up, and Virchow's "Cellular Pathology" marks an epoch in medicine. To-day we are a stage further, for the inquiry is being pushed into the more intimate structure of the cell itself, in the hope of revealing the nature of the processes by which it carries on its work.

RISE OF PHYSICS AND CHEMISTRY.

The rise of physics and chemistry has been even more fruitful for medicine. We cannot nowadays consider them separately, so closely merged have they become. We recognise the fundamental importance of these sciences for the right understanding of physiology and pathology by placing them at the root of medical education.

Chemistry has influenced medicine from the days of alchemy onwards; Paracelsus and Van Helmont stand out as picturesque figures in its history. In England the rise of physics and chemistry began in Harvey's lifetime with those meetings of scientific men which later gave birth to the Royal Society. It must not be forgotten that the work of such men as Boyle, Hooke, Lower, and Mayow practically solved the problem of respiration not long after Harvey's death—a problem second only in importance to that of the circulation—though a century was to elapse for its full meaning to become clear with the discovery of oxygen. Every advance in physics and chemistry has borne fruit for us in its turn; to-day we can almost affirm that the chief issues in physiology and pathology are to be sought in the chemical activities of the human body. These, again, are bound up with physical conditions, and there is one recent branch of chemistry, the possibilities of which are only beginning to be appreciated in medicine. If we reflect that the body, from a chemical point of view, consists almost entirely of colloids, the behaviour of which is still imperfectly understood, it will be realised that advances in colloidal chemistry are destined to throw a flood of light upon the processes of vital activity.

The doctrine of evolution has scarcely received the attention it merits as a factor in modifying the opinions of medical science. So long as it was believed that the body, with all its natural functions, had been created from the first in its present condition, there was little room for inquiry into the origin of those functions, and still less into that of morbid processes. Darwin has changed all this, as a single instance will suffice to show. Metchnikoff's studies on the comparative pathology of inflammation have taught us that this is not a diseased state but a purposeful reaction against injury, gradually perfected in passing up from the lower to the higher animals. Almost without our being conscious of it, the idea of evolution has gradually effected a great change in the standpoint from which we view a large number of diseases, the symptoms and morbid changes in which we now understand as efforts of the body to maintain its integrity in face of the injurious agencies which threaten it. One might almost re-write pathology from the evolutionary point of view.

DISCOVERY OF THE NATURE OF INFECTION.

Last, but not least, of the great changes which have swept over medical science is that which was due in the first place to Pasteur, was carried on by Koch, and brought to triumphant practical application by Lister. The discovery of the true nature of infection has of necessity transformed the outlook of medicine and surgery, but bacteriology and its daughter science immunology would demand a Harveian oration to themselves.

We loosely speak of such fundamental discoveries as those I have just mentioned as producing a revolution in medical science. It is not revolution but upward growth. With the establishment of each great principle we gain a fresh height from which the field of science takes on a new and wider aspect, and we may be confident that we shall reach yet greater heights to reward us with an even ampler range of vision. There is no sign that the vitality of science in our civilisation is in any way spent; on the contrary, its fertility is unchecked. During the late war we saw for the first time the scientific forces of this country fully mobilised, and no previous five years have seen so many scientific problems brought to a successful issue. So forcible has been the lesson that science has gained mightily in public estimation and research is on the lips of everyone. New facts are being gathered in, old facts are coming to be seen in a new light; we are almost bewildered by our own progress. The workers in the field of medical science are many, and it may not be given to any one of us to make an immortal discovery, such as that of the circulation of the blood. But the humblest of us can work in Harvey's spirit and bring his contribution to the building up of knowledge in the full assurance that even a single stone, if honestly and truly squared, will in due time find its proper place in the fabric.

An Address
ON
THE CAUSES OF NERVOUS DISEASES.

Being the Presidential Address of the Neurological Section of the Royal Society of Medicine, Oct. 14th, 1920,

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I WISH to thank you for the great honour you have done me in electing me to this chair, one that has been occupied by so many illustrious men. I have been much puzzled to know why I have been chosen, for I do not feel conscious of having done any special work which would warrant it, and I can only suppose that I am regarded as the representative of men in the Manchester area who have done so much for neurology, beginning with Braid, who was one of the first to investigate hypnotism, and followed by Ross, Dreschfeld, Judson Bury, Thorburn, Williamson, Orr, and Rows.

In dealing with nervous disease I often wonder whether we realise how few cases of any individual affection, the signs and pathological anatomy of which are thoroughly well known, any single observer sees in the course of, say, five years. How many cases in this period has any single person had under his care of myasthenia gravis, of amyotrophic lateral sclerosis, of progressive muscular atrophy, of syringomyelia, of alcoholic paralysis, of Erb's paralysis, or even of writer's cramp? No wonder that the exact causes of so many nervous affections are so little known.

CLASSIFICATION OF CAUSES OF NERVOUS DISEASE.

In the Bradshaw lecture[1] which I delivered in 1917 I made an attempt to classify the causes of disease into the following ten groups: 1. Injury. 2. Food and feeding. 3. Poisons. 4. Occupation. 5. Stress. 6. Abnormal metabolism. 7. Abnormal age-changes. 8. Neoplasms. 9. Parasites, including micro-organisms. 10. Heredity. I propose in this address to use this classification to study the causes of nervous diseases to estimate roughly their frequency in a busy industrial area, and to remark on special points as they arise.

Injury.

Besides the various injuries, such as meningeal hæmorrhage or obstetrical paralysis occurring during birth, injury may, of course, affect any nervous structure from the whole brain to an isolated peripheral nerve. However unfortunate for the recipient, these injuries from their effects have been the means of elucidating enormously the functions of the nervous system, and in no instance more prominently than by the work of physicians and surgeons during the late war. I include cold draughts or prolonged cold applications amongst injuries, for I am convinced that Bell's palsy, brachial neuritis, and sciatica can be so caused.

It is supposed by some that injuries of the head or spine may give rise to indefinite symptoms of a neurasthenic nature owing to multiple very minute hæmorrhages or to some more subtle molecular change. In my view very many such neurasthenias or hysterias are either feigned or are emotional in origin and are quickly recovered from when legal proceedings are over. But apart from these there are very genuine cases of traumatic neurasthenia, especially after head injuries, cases with persistent headaches, attacks of vertigo, insomnia, affections of memory, loss of power of mental concentration, mental depression or mental inertia almost amounting to a dementia. I have seen such cases where no question of compensation arose or where all legal proceedings were over. After tearing of minute muscular or tendinous attachments, even from trivial injuries as from the strain of lifting a heavy weight, local pain may be very long lasting, possibly from the involvement in cicatricial tissue of nerve fibrils such as may occur in a painful stump.

Food and Feeding.

I know of no nervous disease which may be caused by food in this country, however much it may be possible to associate beri-beri, ergotism, pellagra, and lathyrism with the dietary of foreign countries. But if alcohol be included in this section, then we have the many effects of its abuse varying from delirium tremens to neuritis. Further observations since the arsenical-beer poisoning epidemic in the Manchester district in 1900 have only confirmed a statement made by me at that time that alcoholic beverages uncontaminated with arsenic very rarely indeed, considering the quantities taken, give rise to neuritis.

Poisons.

Poisons which may affect the nervous system are few in number. Of these lead, in my experience, is by far the commonest. Mercury poisoning with its tremors is very rare. In both these cases the risk of having to pay compensation to workmen has had an excellent effect in making employers employ rigorous safeguards. I have in the last few years seen several cases of widespread peripheral neuritis affecting sensation and motion in which the only antecedent I could trace was coal-gas either unburnt or burnt. In the former case I presume the poison has been carbon monoxide, but in the latter I am at a loss to know the actual poison. I wish to draw attention to the possible danger of working in these fumes, which may emanate merely from the unventilated domestic gas-stove.

Occupation.

Living as I do in the centre of what is probably one of the most industrial areas in the world, I have been struck with the few nervous diseases caused by occupation. The various "cramps"—writer's, telegraphist's, hammerman's or pianist's—are all, considering the numbers of people so engaged, very rare indeed, writer's cramp being, of course, the commonest. None of these occurs, in my opinion, unless there is a strong neurotic element already present in the sufferer. Many cases of progressive muscular atrophy, also a rare disease, are due, I am convinced, to the early death from over-use of late developed small central cells in the anterior horns, the cells which have specially developed to enable special skilled occupations to be performed. This was pointed out years ago by Ross, but does not seem to have been sufficiently recognised. In the busy needlewoman it commences in the small muscles of the hand, in the tramcar driver in the muscles of the right forearm which he uses to apply his brake, in the collier and in the puddler in the shoulder muscles. I have recently seen a case in which it commenced in the thigh and lumbar muscles in a man who spent his life lifting stones and carrying them up ladders. In all these cases there were the typical fibrillary twitchings, the loss of power, and the atrophy developing pari passu and not one before the other.

Stress or Strain.

Stress or strain, caused by overwork, hurry, and worry, is the origin of much nervous disease. It is the frequent cause of cerebral arterio-sclerosis, to which I will refer later. It is also the cause of neurasthenia of the purely acquired type, a type most important to recognise, as it is so eminently curable. A man gradually finds he is not able to fix his attention on his business; he dare not open his letters in the morning, he loses the power of routine work, cannot concentrate his mind, and so loses his memory for recent events; he has pressure pain on the top of the head and dragging sensations at the back of the neck; his appetite is not good and he may have insomnia. These cases have been very common since the Armistice of November, 1918. During the war men at home were enormously overworked and worried, but they struggled gamely on until the danger was over; they went through the terrible four years with no holiday. But when the war was won many of them simply crumpled up. Fortunately, the treatment for these

[1] THE LANCET, 1917, ii. 703.

cases is simple; a total rest in some quiet place, entirely free from business for one or two months, is a certain cure—a different prognosis from the hereditary neurasthenia of which I shall speak later. Personally, I have always looked upon Graves's disease as essentially nervous in origin, and I should class its cause as stress, whether due to the fright of a bursting shell, the excitement of battle, or the hurry and worry of life. I think it only occurs in certain types of people, for, as I wrote many years ago, it was almost unknown in my long experience as visiting physician in one of the largest workhouse hospitals in the country, whereas, of course, it is quite common in ordinary hospital and in private practice. The nervous constitution which may lead to pauperism does not seem to be of sufficient inherent energy to develop Graves's disease.

Abnormal Metabolism.

I know of but few nervous diseases which can be distinctly said to be due to abnormal metabolism. But then, to my mind, a good deal of what is written about metabolism is itself quite indefinite. I am, however, prepared to believe that certain nervous affections are due to abnormal chemical processes going on in the body. There is, of course, a diabetic neuritis associated with changes in the posterior columns, and quite possibly there may be a gouty neuritis. Is myasthenia gravis, with the fatty changes of the thymus gland and the lymphorrhages in the muscles, due to an altered metabolism? Probably the combined postero-lateral degeneration found in many anæmias and in certain exhaustive states, described by Putnam and Dana in 1891, is secondary to some chemical change. And cases of tetany secondary to obstruction near the pylorus, and sometimes seen in rickets, may be metabolic in origin. Has disseminated sclerosis any connexion with altered metabolism? Probably not, but we do not know.

Abnormal Age Changes.

One of the commonest nervous affections seen in a great industrial area is early senile cerebral softening due to early cerebral arterio-sclerosis, sometimes hereditary, more often due to stress. I have recently seen such a case commencing with a slight hemiplegic seizure at 42 years of age, and I have seen several men very senile as regards brain function below the age of 50. After 60 years of age it is quite common. To the general practitioner it causes much difficulty in diagnosis, for it appears in so many different forms. Not a few are very similar in many respects to general paralysis of the insane, and some of the cases in asylums which are described as chronic general paralysis going on for five or six years are, I think, of this nature, and not true general paralysis at all; they may have epileptic or apoplectic seizures, the speech is very similar to that of the G.P.I., and the mental condition not unlike, but it will be found that the tongue is protruded without hesitation, is not tremulous, and the pupils react to light. Other cases are merely hemiplegic, others paraplegic and with pseudo-bulbar paralysis. Some with marked physical signs are quite clear intellectually, others almost demented and with a hyper-emotionalism which is almost characteristic. Some because of the altered speech and the increased reflexes may be mistaken for disseminated sclerosis. Many have an increased blood pressure, but some have a low blood pressure and a somewhat feebly beating heart, and the radial artery may give no indication whatever of the extent of disease of the cerebral vessels.

Of a similar pathological origin but affecting the lumbo-sacral cord is senile paraplegia, so-called by Gowers, and caused by senile changes in the very long narrow arteries supplying that part; and just as one may have temporary hemiplegia from temporary thrombosis of the vessels of the internal capsule, so may the senile hemiplegia be temporary in character, improving as the circulation is improved.

Paralysis agitans is another typical abnormal old-age change, although it may commence before 30 years of age. It is often preceded by pain and stiffness of the limb first affected, generally the arm, thus resembling a brachial neuritis; and although at first there may be no tremor, the mask-like face and slow movements are indications of what is approaching. It is noticeable for how long a time these cases will retain their intellect intact, and although some of them are morose and depressed, in others a keen sense of humour is quite astonishing.

Other local senile changes set up labyrinthine vertigo and others intermittent limp. I think it possible that the uncommon disease chronic anterior poliomyelitis may be due to early but progressive degeneration of the anterior horn cells, but opportunities for investigating this condition are rare.

Neoplasms.

In considering new growths of the brain and cord one would like to know, principally for medico-legal purposes, to what extent injury is a cause. It is a most difficult point to prove, for we all, I suppose, sooner or later, receive blows on the head more or less severe, and of course brain tumour is relatively rare. But are there some people with some predisposing condition in which an injury will be the exciting cause of a growth? Personally, from cases I have seen I am rather inclined to think so, and this is a point well worthy of further investigation and statistics. I have been struck with the number of cases of brain tumour occurring in men and women over 40 years of age who were otherwise of fine physique, the early symptoms being often most misleading and indefinite.

Parasites and Micro-organisms.

The gross parasites, hydatids or *Cysticercus cellulosæ*, very rarely affect the nervous system. I have personally never seen such cases. But the other parasites, the micro-organisms, are probably the cause of very many cases of nervous diseases, including, as they do, the tubercle bacillus and the *Spirochæta pallida*. Rheumatic fever, the acute infectious fevers, the septic and pyæmic organisms, tetanus, rabies, are also examples. And the further investigations are carried the more diseases are likely to be included in this group. It is quite a few years ago since acute anterior poliomyelitis was shown to be of germ origin; and in passing I should like to state my opinion that acute cerebellar ataxia is merely one variety of this disease, the area affected being localised to the cerebellum. Probably all forms of myelitis (apart from direct injury) are microbic in origin, and the "reflex paraplegias" have become more understandable since the researches of Orr and Rows. Acute ascending paralysis is almost certainly caused by germs or their toxins. So-called acute lethargic encephalitis (a very unsatisfactory name) has recently revisited mankind, and I agree with Dr. Farquhar Buzzard that it is a much more serious affection than the early cases led some of us to suspect, for not only may it be rapidly fatal, but its sequelæ may be most disabling and long lasting.

Of all nervous diseases disseminated sclerosis is far away the commonest that I meet with and the investigation of its cause is a matter of urgent necessity. I have, in the Bradshaw lecture, given my reasons for thinking that it is due to some special micro-organism, and its course and symptomatology are so similar to those of syphilitic nervous affections that I am quite prepared to believe that a special spirochæte differing from the *Spirochæta pallida* was found by Siemerling in 1918 in brains of disseminated sclerosis patients. Kuhn and Steiner, in 1917, inoculated intraperitoneally guinea-pigs with the blood and cerebro-spinal fluid of patients with disseminated sclerosis and were able to demonstrate the presence of a spirochæte in these animals, in several of which motor disturbances in the limbs developed after an interval of three days. Simon successfully repeated these experiments, using rabbits, injecting cerebro-spinal fluid subdurally, and in 1919 Marinesco injected the cerebro-spinal fluid of two patients into six guinea-pigs, using the intracerebral, intraspinal, and intraperitoneal routes in different animals. The two animals injected intracerebrally showed a few days later paresis of the hind limbs, and their cerebro-spinal fluid obtained from the fourth ventricle contained numerous spirochætes.

Heredity.

When one remembers that the nervous, muscular, and reproductive systems are the master tissues of the body it is obvious how nervous disease may so very frequently be inherited. The bulk of insanity (at least 75 per cent.) is handed down, including nearly all epilepsy, migraine, psychasthenia, much neurasthenia, habit spasm (including stammering), adult chorea, the tendency to early cerebral arterio-sclerosis, Friedreich's ataxia, hereditary cerebellar ataxia, familial spastic paraplegia, peroneal atrophy, and the various types of myopathic paralysis. Personally I see no difficulty in understanding why this heredity should occur; structure and feature are handed down from parent to child, and this being so one naturally expects function to be similarly handed down. Indeed, the surprise would be if it were not. I will allude to one or two only of these hereditary affections.

Epilepsy I define as a disease characterised by a definite alteration of the brain cortex which renders it, as the result of some irritation, abnormally liable suddenly to liberate energy. Whether this alteration is a structural one not yet discovered or is due to an abnormal instability of the latent nerve energy I am not prepared to discuss; but the irritation may be anything from mental worry to intestinal worms. Putting aside those cases of convulsion due to definite coarse structural changes such as brain softening, general paralysis, brain tumour, the cortical sclerosis of infantile hemiplegia, toxic conditions such as lead, alcohol, chronic renal disease, and the puerperal state, I consider that all fits are due to essential epilepsy. The teething convulsion, the convulsion due to worms, the convulsion following fright or coming on some days after slight head injury, even if never followed by another fit, are in my view all true epilepsy.

Further, I consider that practically all true epilepsy is hereditary. A child after the irritation of teething or after a fright or after a slight blow on the head has no right, if of good heredity, to have a fit, and if it has there is almost certainly a neurotic heredity, and it may at some future time, long or short, have other fits. This is, I know, a rather alarming view to take of a simple infantile convulsion, but it is a very important one in view of prognosis, and I have been forced into this conclusion by minutely investigating large numbers of family and personal histories. The heredity may be alcoholism, or insanity, or epilepsy, but as a rule it is epilepsy itself. The more one cross-examines the friends the more one is confirmed in this idea. I am frequently told on inquiry that "there is no such thing as epilepsy in the family," but on pressing the question the parents say, "Oh, his brother had convulsions when teething, but has had none since." Or I find that a cousin had some kind of fits for a few years. Sometimes I hear that "the father or a brother had fits until they were 16, but none since," and so on. It is probably owing to the popular but quite erroneous idea that if essential epilepsy once occurs it continues until death that these family histories are difficult to obtain. I have been struck with the relative frequency with which epilepsy may cease as a person grows older; whether this is due or not to slight age-changes in the cortex, rendering it less explosive, I cannot say.

Migraine is another disease almost always hereditary, generally handed down from the mother. Just as epilepsy may be roughly described as a nerve-storm due to some irritation acting on the cerebral cortex and producing generally some motor disturbance, so I look upon migraine as a nerve-storm due to some irritation acting on some part of the brain and producing headache. And just as in epilepsy the symptoms may be sensory or psychical rather than motor, so in migraine one sometimes has motor phenomena either with hemiplegia (associated with aphasia if on the right side) or a temporary weakness of a limb. There are, of course, other similarities between epilepsy and migraine, the common commencement about puberty, the gradual diminution of the attacks as life advances, the visual or sensory auræ, the exhaustion following the attacks, the similarities of the causes of the attack—as worry, anxiety, excitement, sudden awakening from deep sleep, crowded rooms, the menstrual period in women, &c. So that one is not surprised to find that the migrainous subject may have occasional attacks of epilepsy. Illustrations of such will be found in Sir William Gowers's most interesting little book on "The Borderland of Epilepsy." Another resemblance is the status migrainicus, in which a series of attacks occur, one overlapping another, just as do the fits in status epilepticus.

But I do not think the two diseases can be considered as different manifestations of one disease. Epilepsy in an ancestor does not seem to be a precursor of migraine, nor migraine of epilepsy. Another outstanding difference is that while as a rule the epileptic is more or less affected in his intellect the migrainous subject as a rule is more or less possessed of a higher intellect than the average. Any auræ which may occur in migraine are slow and comparatively long lasting, and the final manifestation of the attack—namely, the pain—lasts for many hours. The cerebral seat of the attack in epilepsy is, of course, in the cortex, but I should much like to know the exact seat of the temporary lesion of migraine.

I have no sympathy with those who say that migraine is always due to eye-strain, or to too much nitrogenous food, or to a high blood pressure, or an excess of uric acid in the system, or always to one type of irritation. The heredity must be present, and granting that almost any kind of irritation may act as an excitant of the attack.

I have already alluded to the acquired neurasthenia produced by stress and noted how curable it is. But there is another form of neurasthenia commencing in younger subjects in which the stress is very slight or almost absent, which is purely hereditary, and being a manifestation of some inherent abnormal constitution of nerve matter is often incurable, or at any rate very difficult to deal with; alleviation may happen, but relapses are common. Its symptoms, very similar to those of the acquired type, are entirely subjective and sensory (quite different from the objective signs of hysteria), and relate not only to peripheral somatic nerves, but to those of the viscera; these patients seem to feel the workings of their internal organs.

Another strongly hereditary affection is psychasthenia, in which the mind is involved to such an extent that, although not insane, some of them are borderland cases and in some their ideas finally so influence their conduct that insanity supervenes. Just as the neurasthenic seems to be disturbed by the working of his viscera, so the psychasthenic seems to be disturbed by the working of his brain.

HYSTERIA AND MALINGERING.

In spite of the very numerous definitions of hysteria since the time of what Dr. Walshe calls "that admirable psycho-analyst, King Solomon," I will attempt another, one which, at any rate, is sufficiently definite to include all cases of hysteria which I have seen. I define it as a mental condition in which a disease is imagined and assumed, but for which there is no known physical cause in the assumer, the basis of the condition being a morbid craving for sympathy or notoriety, or both. One is constantly puzzled in compensation work to know whether a person is hysterical or is malingering, a most important medico-legal distinction; for hysteria, being supposed to be an altered mental state, has to be paid for if caused by an accident; but malingering, being a deliberate fraud, has not to be paid for. The dividing line between the two conditions is sometimes so small as to be negligible. I would define malingering as a condition in which there is a deliberate assumption of a disease, the basis of the assumption not being a craving for sympathy or notoriety, but a desire for personal and material gain.

Allow me to give a few instances. In Bucknill and Tuke's "Psychological Medicine" (fourth edition, 1879, p. 472) you will find that John Jakes was sentenced to four years' penal servitude; he had a fit immediately afterwards while in the dock and became hemiplegic and speechless. He remained in this condition and was very helpless while in prison for

a period of 12 months, but he managed to make a key from a tin cup, escaped through a window, climbed a door 8 feet high, and then a wall 8 feet high, and cleared off, and was never afterwards traced. He was a malingerer.

Some years ago I was asked to see and to give evidence for a man who had been struck on the side of the head in a railway accident; he had on superficial examination a typical hemiplegia which had developed slowly and was supposed to be due to a brain tumour, the result of his injury. But he did not know the anatomy and physiology of the nervous system as well as I did, and although he was remarkably clever in his imitation he was not quite clever enough, and his manner suggested to me that he was a deliberate fraud and I declined to appear for him. But he was awarded £2500 damages. Within a fortnight he was seen dancing in a well-known ballroom at Blackpool. He was a malingerer.

A girl of 18, in good circumstances, fell off her bicycle, injured her left musculo-spiral nerve, and had a genuine dropped wrist. I think she was the only child of very fond parents who fussed unduly about this slight accident. Three days afterwards she suddenly developed a hemiplegia on the same side, thus causing intense alarm. Her doctor sent for me and I was able to satisfy him that the hemiplegia was not due to organic disease. The girl had a morbid craving for sympathy and notoriety and had hysteria.

Some years ago there was a woman in a hospital for women in Manchester who complained of some pelvic trouble, but nothing could ever be found except that she had alarming temperatures up to 103° or 105° F. very frequently; she was kept in hospital for about three months. Then I was asked to take her into one of my hospital beds. She appeared quite healthy and well nourished, but still had the extraordinary temperature. After a few days, using two thermometers simultaneously, one in each axilla, and holding her arms still I found the temperature normal, although the chart temperature just taken by the nurse was 105°. I said to the patient, "What have you been doing this for?" She looked at me a moment and then replied, "Well, as a matter of fact, I have no home and cannot easily get work and naturally I am more comfortable in hospital than anywhere else." She was a malingerer.

A few weeks ago I had a young woman in my wards who looked very ill and anæmic and had a temperature for some days up to 103°. She complained of pain in the epigastrium and right hypochondrium, made much worse by pressure; I found she had been an out-patient for many months with marked symptoms of gastric ulcer. I thought she had a subdiaphragmatic abscess, and asked a surgical colleague to see her; he agreed with me and operated at once and found nothing abnormal. Shortly afterwards she was sent back to my ward still looking anæmic and ill and still with the temperature. I then used two thermometers as before described; the temperature was normal, and remained so until her discharge. She had nothing material to gain by her assumption, but she had a craving for sympathy, and was a hysteric, not a malingerer.

I was asked to see a man who was claiming compensation for an alleged injury of the back. His gait was that of a typical case of spastic paraplegia; but I was rather suspicious about him, so I took his boots and stockings off and asked him to walk in his bare feet. He had evidently seen true spastic paraplegics walking in the street, but he had never seen them walk with bare feet. He stood up and then hesitated, as he did not know how his bare feet ought really to behave, so he deliberately threw himself down on the floor as if suddenly completely paralysed. He was a malingerer.

I saw a girl in a small village on the Yorkshire moors who had been bedridden for months with total paralysis of sensation and motion of both legs. She was the object of much solicitude and inquiry from all the neighbours, her room was laden with flowers, and she was evidently the centre round which the whole household revolved. I took her into a nursing home in Manchester absolutely isolated from all her friends, including her doctor, and although she was a difficult proposition she was well in a fortnight. She was a hysteric craving for attention and notoriety.

And so I could go on with case after case to illustrate my point.

In both hysteria and malingering any disease may be imitated which the person has seen or heard of or read about, but never one of which the person has no previous knowledge. Secondly, in both cases there must be an audience. No one isolated in the desert of Sahara would have a hysterical fit or would malinger. As a rule, the condition produced is one that can be examined by an observer, such as assumed blindness, deafness, mutism, loss of sensation, loss of power, vomiting, or raised temperature. But sometimes both in hysteria and in malingering there is merely the complaint of some pain, for the existence of which one has no evidence except the statement of the person. And in my experience the cleverest malingerer is the man who says, "Since my accident I have had a pain in one spot in my back," and who always tells the same tale and refuses to elaborate his story in any way.

I remember many years ago hearing Hughlings Jackson in an address in Manchester refer to hysterical convulsions as "sham fits," and I also remember how shocked I was to hear them so described. But the more I have seen the more I feel, if it is not an impertinence to say so, how correct his description was. In thus comparing hysteria and malingering I would not for one moment suggest that the treatment for hysteria is to be the same as that to be meted out to the malingerer. Babinski's definition of hysteria as a psychical state manifesting itself principally by symptoms which can be reproduced by suggestion and made to disappear by persuasion is, to my mind, more a description of hysteria than a help to its cause and nature. It is of the utmost importance in treatment to think of its cause as a craving for sympathy and notoriety. But the sympathy with which it is cured is the persuasive, encouraging optimistic sympathy, not the coddling and pessimistic sympathy which makes it worse. Janet's definition of hysteria as a form of mental depression characterised by a retraction of the field of personal consciousness and a tendency to dissociation and emancipation of the systems of ideas and functions that constitute personality I certainly cannot subscribe to. So far from a retraction of the field of personal consciousness or of absent-mindedness, large numbers of hysterics, the great majority in my experience, are eminently alert. They may appear to be half asleep or absent minded, but they are really watching the physician as acutely as he is watching them. But I am prepared to admit that in some cases they may suffer from a self-induced hypnosis.

FREQUENCY OF GROUP INCIDENCE.

I find much difficulty in allotting to each causation group its proper value as a causative factor, partly owing to the fact that we have no tables of morbidity to refer to, and partly because my classification is not truly logical as the groups are not watertight compartments. For instance, cerebral arterio-sclerosis is partly due to abnormal old age and partly due to stress; some occupation diseases are due to stress and some to poisons and so on. But trying to look from a large view-point at such nervous diseases as I have seen, I should place heredity as the chief cause of nervous disease, including, of course, insanity, which to my mind is just as much a nervous disease as is epilepsy or locomotor ataxia. Then I should place micro-organisms as the next great cause. Then I think would come abnormal old-age changes and stress, and about this level, injuries, as I see many workmen's compensation cases. The remaining classes I cannot value accurately. Food would be low in the list, as would also be poisons, but either of these classes would be raised according to whether you include alcohol as a food or as a poison. Neoplasms are rare, especially tumours of the cord, but those of the brain commoner than I used to suppose. Metabolism and occupation pure and simple are probably lowest in the list.

But I expect each one of us, according to his experience, would arrange the list separately, and I leave it to those who are interested and who think it worth while to arrange their cards as they deem best.

WINSLEY SANATORIUM.—The proposed new further additions to this institution, which is near Bath, include a wing for 30 patients and an administration block, with quarters for assistant medical officer and 10 bedrooms for nurses. A separate house for the senior medical officer will also be erected. A lady resident of Clevedon, Somerset, who desires to make provision in her will for poor tuberculous patients of that town, made an application to the committee of the sanatorium in this matter, and it has been decided to erect a memorial wing if the balance of the trust should prove sufficient to maintain the beds.

THE MEDICAL REQUIREMENTS FOR AIR NAVIGATION.[1]

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THE title taken for this paper is that employed by the International Convention of the Peace Conference. It should not, however, be taken as applying particularly to the medical requirements of the aerial "navigator" and not also of the pilot; indeed, this paper deals more particularly with the latter, since in the Royal Air Force the duties of both navigator and pilot will in future be carried out by those who have obtained their "wings." There was a time when certain people were sceptical as to whether any special medical examination was required for those who were to engage in flying. After the outbreak of war the reports of medical officers in charge of flying personnel showed conclusively that such an examination was absolutely necessary if unsatisfactory material were not to be admitted to the Flying Services. In the Royal Navy, Fleet Surgeon Hardy V. Wells (now Wing Commander, R.A.F.M.S.) had, since 1912, been interesting himself in the medical aspects of flying, and he may be regarded as one of the pioneers of the subject in this country. Mr. Graeme Anderson, while serving with the Royal Naval Air Service, also made a special study of this subject, being particularly interested in the psychological and surgical aspects. For the suitable selection of flying personnel the War Office deemed it necessary to appoint in 1916 a special medical board, on which Mr. Arthur Cheatle and Dr. G. A. Sutherland served. We owe much to the knowledge derived from their work with this board. Dr. C. B. Heald (now medical adviser to the Controller General of Civil Aviation) also became identified with the activities of this board. He had had previous experience with squadrons of the Royal Flying Corps in the field, and it was largely owing to his zeal that the Air Board established an Air Board Medical Research Committee to study the particular medical problems of flying. In this way the National Medical Research Committee, now the Medical Research Council, became interested in the subject and provided facilities for the proper investigation of the various problems, establishing also, under the chairmanship of Dr. Henry Head, the Air Medical Investigation Committee to coördinate the various researches. The report[2] of this Committee on the Medical Problems of Flying has been recently published.

Dr. J. L. Birley, who acted as senior medical officer for the Royal Flying Corps in the field, has greatly advanced our knowledge in regard to medical aspects of aviation, and has recently admirably set forth his views in the Goulstonian lectures[3] to the Royal College of Physicians of London. We owe much also to the work in this country of Dr. A. P. Bowdler, who for many months was in charge of the Aviation Commissions Board, and whose hearty coöperation in much work on the selection of flying personnel the writer desires particularly to ackowledge. The selection of the flying officer is the work of both the clinician and the physiologist. It is from the latter point of view that the subject is regarded in a very general fashion in this paper. At present much research is being carried out in regard to the stability and performance of the aeroplane; the fact remains, however, that for many years to come the man stepping into the machine provides the controlling and coördinating mechanism. As with the machine, this controlling mechanism must be in every way suitable and in the best of order; it is for this reason that only fit healthy human mechanism must be placed in charge of flying machines. Both for the efficiency of the Royal Air Force and for the success of civilian aviation it is necessary therefore that the greatest care be exercised in the selection of the flying personnel.

The Importance of Previous Medical and Family History.

Just as if one were choosing an aeroplane or motor-car one would go into the record of the firm building it, so in choosing the human mechanism a good family and personal history is required. The importance of this aspect cannot be overstated. For this reason careful inquiry is made in regard to previous health, especially in respect of such ailments as may influence efficient work in the air. From the surgical point of view certain conditions preclude admission for flying. Full details in regard to requirements as regards personal and family history are given in the official publications (F.S. 130 and C.A. Publication 1).

In the selection of the flying officer three points have to be borne in mind: (1) The suitability to acquire the art of flight (the possession of a correct degree of neuromuscular coördination); (2) capacity for high flights or flights of long duration (physical endurance); (3) mental aptitude for flying and, in the case of the R.A.F., for combatant service in the air.

The Assessment of Mental Aptitude.

In regard to mental aptitude, in certain countries great attention is paid to the selection of the flier from the psychological point of view. The value, for instance, of the examination of psychomotor responses is acknowledged, but in this sport-loving country it is felt that a history of aptitude for sports of various kinds is of equal value to a very special and elaborate experiment, often carried out under nerve-trying conditions during a long medical examination of the candidate. It is by no means certain also that the responses given indicate with great exactitude a man's capacity for flying since, during the process of learning to fly, the psychomotor reflexes of the individual may be greatly quickened. Flying is largely a matter of correct hand and foot coördination, and for this reason the British authorities in assessing quickness of eye and hand and leg coördination attach much importance to the sporting prowess of the individual. As regards the psychological examination of the candidate it is interesting to note that Dr. W. H. R. Rivers and Squadron-Leader T. S. Rippon, working in conjunction with an experienced pilot (the late Lieutenant E. G. Manuel) came to the conclusion that the experienced executive flying officer can in this direction be of the greatest service to the trained psychologist. For this reason it is proposed to have at the Commissions Board of the Royal Air Force an experienced flying officer to aid in the assessment of the mental aptitude of the subject for flying.

The "Sensory" Requisites for Flying.

Considerable discussion has taken place as to what "senses" are particularly necessary in the flier. Since flying takes man into a third dimension of space considerable importance has been attached by some authorities to a "sense of balance." It is common experience, however, that when flying in a fog the aeronaut loses all sense of his position in regard to the earth, and may find himself upside down without knowing it. Successful flying in fog will depend upon the use of special instruments. The flier relies particularly upon the sense of vision; he derives also much information from the "feel" of the joystick and the rudder, his contact with his seat, the sensation of the wind on his face, the singing of the wind in the wires, and so forth. It is always to be remembered that with centralised controls most modern machines have a fair degree of inherent stability; they are not, however, endowed with a sense of vision or touch; hence the importance of vision and "tactile and muscle sense" to the flying-man.

The Importance of Vestibular Tests.

In certain allied countries, however, particularly in the United States of America, great importance was at first attached to the supposed "motion-sensing functions" of the vestibular apparatus. On them the success or failure of candidates for flying was believed largely to depend. The sensibility of the vestibular apparatus was gauged by means of "rotation tests"—

[1] Opening a discussion at the War Section of the Royal Society of Medicine on Oct. 11th.
[2] THE LANCET, Oct. 2nd, p. 706.
[3] THE LANCET, 1920, i., 1147, 1205, 1251.

—namely (1) the duration and extent of nystagmus after rotation to right or left, eyes closed, 10 times in 20 seconds; (2) the amount of "past pointing" after rotating 10 times in 10 seconds; and (3) the severity of the "falling error" after rotation 5 times in 10 seconds. So great an importance was not assigned to these tests in this country, more reliance, as I shall show later, being placed upon the results of the tests for neuro-muscular coördination. When rotation tests were employed it was considered that more reliable information was obtained by observing the ability of a candidate to perform a definite action immediately after rotation while still suffering from vertigo. Generally speaking, rotation tests therefore were only employed when a candidate gave a previous history suggestive of hyperexcitability of the labyrinthine apparatus (train or swing sickness).

As the results of the examination by rotation tests in France of first-grade pilots flying at the front Major Sydney Scott, R.A.M.C.,[4] reported that "the reactions to rotation may be excessive in some individuals and suppressed in others, but in neither case do the reactions of the semicircular canals seem to indicate an airman's probable flying ability." On the other hand, Major Scott's observations showed conclusively the importance of efficient Eustachian tubes, whereby an airman should be able correctly to regulate and equalise the continuous changes of atmospheric pressure experienced during flights from low to high and from high to low altitudes. In addition to deafness and distress, vertigo, vomiting and forced movements, which interfere with the proper control of the aeroplane, are sometimes induced by the unequal pressure in the ears resulting from unilateral obstruction.

At the admission of candidates, therefore, much importance is attached to the free ventilation and drainage of both Eustachian tubes, as well as a healthy condition of the upper respiratory passages generally.

Squadron-Leader D. Ranken, R.A.F.M.S., has investigated the value of the rotation tests by the examination of civilian pilots. He found that experienced pilots have a tendency towards reactions below what are considered normal. Disturbance, present or past, of some other system of the body—as, for example, by influenza and malaria—may affect the labyrinthine reactions. He concluded that "where deafness is present no examination of a candidate or pilot is complete without a careful investigation of the functions and reactions of the semicircular canals of both sides. In the absence of a discovery of present or past signs and symptoms pointing to an aural affection, routine examination by means of Barany tests is superfluous, provided that the standard of the present examination schedule is maintained."

While acting as neurologist to the Central R.A.F. Hospital during the war, Dr. Henry Head, F.R.S.,[5] made investigations using the rotating chair, not as a method of measuring the response of the semicircular canals, but as a means of inducing an abnormal reaction. He was anxious to determine not so much the afferent results such stimuli as the way in which the patient could adapt himself to somewhat violent sensory impressions. The object was to examine his control in face of disturbances of equilibrium. A healthy man responds in a certain way to rotation, although the degree of giddiness varies greatly. Dr. Head found that in certain persons who suffer from morbid phenomena in the air the reaction is abnormal and excessive. It was possible, by rotation in the chair, to induce physiological states and sensations analogous to those experienced in the air; the disability being reproduced in a minor form. This was true, not only in cases of "giddiness," but also in those where the pilot had "fainted" in the air. Dr. Head pointed out that complete adaptation to disturbances of equilibrium in the air is associated with automatic control of the afferent and efferent activities of lower levels of the central nervous system. A perfect pilot desires that his machine shall behave in a certain manner, and the evolution occurs. This acquired faculty can be disturbed by any condition which leads to diminished control. The airman may lose his capacity to fly in consequence of conditions so widely variant as a gastro-intestinal attack or domestic anxiety. Exhaustion, insomnia, the distress of war flying, anxiety, or fear, can all lead to defective afferent and efferent control. Efficient automatic response is then no longer possible, and the pilot begins to fly badly and to make bad landings. This loss of control over the activity of lower levels may be manifested not only in bad management of the machine, but in some dangerous reaction such as giddiness or fainting in the air. When this abnormal reaction assumed the form of giddiness and nausea, it was found in most of the ten cases that the patient had suffered from some discomfort when he first went into the air. Inquiry usually revealed that he was unable to swing with pleasure as a child, and that he tended to be sick when travelling by train. On the other hand, all the five pilots who came under Dr. Head's care for "fainting" enjoyed their first flight and could swing with pleasure.

[4] Medical Research Council, Special Report Series, No. 37.
[5] Medical Research Council, Special Report Series, No. 53.

Visual Acuity and Ocular Muscle Balance.

In acquiring the mechanics of flight good visual acuity is of great importance. It is generally held that such acuity should be normal as tested by Snellen's types. During the war, however, the standard of visual acuity was reduced owing to the needs of the service, but since the armistice it has again been raised to normal. With the object of ascertaining the importance of visual acuity in the flying officer, Wing Commander Bowdler analysed the records of the Aviation Candidates Medical Board. The total number of records examined was divided into five groups, according to the stages reached by the individuals in their flying careers, and the frequency of occurrence and degree of defects in the various groups ascertained for comparison. No individual with worse vision than 6/12, 6/18 was included.

Group I.—3000 candidates examined and accepted for training as pilots.

Group II.—123 pupils training as pilots who failed to qualify—failure occurring during instruction in flying.

Group III.—633 pupils who were successful in gaining their wings.

Group IV.—200 pilots who have been awarded the Distinguished Flying Cross, and in some cases the Bar. Though the average number of hours flown by this group is not known it is probably considerable, but less than that of Group V.

Group V.—363 pilots who have been medically examined by the Board when applying for a civilian flying licence. This group consists almost entirely of experienced pilots with an average of 800 hours flying per man. It includes no fewer than 110 pilots, each with 1000 or more hours to his credit, many of whom were flying before the outbreak of war. Not included in this group were 20 pilots examined for licence (average hours flying 1000) who were found to possess worse defects than 6/12, 6/18.

In considering the percentages under the various grades of defect within the standard allowed it was thought advisable, in view of the small numbers with the higher defects, to group the defectives in two classes for purposes of comparison.

1. Those with small defects—i.e.:

6/6	6/6	6/6	6/9
6/9	6/12	6/18	6/9

2. Those with comparatively large defects—i.e.:

6/9	6/9	6/12	6/12
6/12	6/18	6/12	6/18

It is to be noted that those with normal vision in the better eye are placed among the class of small defects, as vision with both eyes together would be equivalent to 6/6.

The number of defectives in the various groups classed in this way are shown as percentages of the totals examined in Table I.

From this table it will be seen that:—

1. Among the successes and failures of the pilot pupil groups there is little or no variation in the frequency of defects of visual acuity within the limits laid down.

2. Comparing, however, the groups of pilots of long experience and distinction with the accepted candidates there is a diminution of 4 per cent. in the frequency of visual defects among the former; three-quarters of this diminution occurring among those with comparatively

large and one-quarter among those with comparatively small defects. This is suggestive of some falling out from flying on account of deficient vision of men with the comparatively large defects.

3. Of 383 experienced airmen there failed to reach the standard of normal vision in each eye 93 pilots, who in the aggregate had flown for 75,000 hours. Of these 65 had small and 7 large defects within the standard, while 20 had defects ranging from 6/12, 6/18, to as high as 6/60 in each eye.

TABLE I.

—	No.	Visual defects.	Small defects.	Large defects.
		Per cent.	Per cent.	Per cent.
Group I.—Accepted candidates	3000	24·5	19·2	5·2
Group II.—Pilot pupils failing	123	18·7	13·6	4·8
Group III.—Pilot pupils qualifying	633	18·6	12·78	5·58
Group IV.—Pilots with distinctions	200	20·5	18·5	2·0
Group V.—Civilian pilots	363	20·1	17·7	2·16

It will be seen on the whole, therefore, that for military service the available evidence is in favour of normal vision in pilots, small defects only being in any way admissible, if prolonged, efficient, and distinguished service is to be rendered by the candidate.

Besides good visual acuity it was found, as the result of investigations by Major (now Wing Commander) E. C. Clements, that good ocular muscle balance with good visual fusion was particularly necessary if the subject were to learn to land his machine properly. Experience has shown that, from one cause or another, ocular muscle defects may also appear after admission, either in cadets during training or in officers after considerable periods of service; these defects creating difficulty and even inability to estimate the distance the subject is above the ground, causing "flattening out" too soon or too late and consequent bad landings.

The exact condition in cases of heterophoria can only be worked out by the ophthalmic surgeon. Major Clements found that many of the defects shown by these tests were amenable to treatment by suitable eye exercises with Worth's amblyoscope and Wells's charts. During the period August, 1917, to July, 1918, he saw

TABLE II.

Name.	Date treatment finished.	Type of machine.	Result.
H.T.R.	10/11/17	Seaplanes.	Calshot, 13/5/18.
H.M.O'L.	12/11/17	,,	Effective, landings good (15/10/18).
H.M.	16/12/17	Bombers	Posted missing, 19/5/18.
J.C.W.	4/1/18	,,	H.M.S. *Argus*, 19/10/18.
C.H.L.S.	13/1/18	,,	Effective, landings D.H.6 good, 244 Sqdn., 15/10/18.
S.D.	20/1/18	Deck flying.	Effective.*
H.R.	5/2/18	Bombers	Effective.†
J.W.K.	22/2/18	,,	Posted No. 5 Group, 9/9/18.
C.W.S.	10/2/18	,,	217 Sqdn., 1/11/18.
F.C.L.	16/2/18	,,	Dunkirk, 8/4/18.
G.F.S.	20/3/18	—	H.Q. 68 Wing for 256 Sqdn., 8/10/18.
E.G.W.	16/3/18	—	H.M.S. *Furious*, 22/6/18.

* Landings good. Slight trouble with his eyes has quite disappeared (21/10/18).

† After carrying ont five raids, Lieutenant R. went to hospital for treatment for his eyesight on 1/6/18 (conjunctivitis). He returned on 29/7/18 and has since carried out 17 raids without any further trouble in his landings (14/10/18).

and treated 104 officers who would have been "turned down" for bad landings if they had not been sent to him for treatment. Of these cases, it was possible to trace 73 officially. Of these 73, 55 subsequently proved successful in flying, often on active service; 4 proved failures, primarily on account of the persistence of their inability to land a machine after treatment, 6 were found unsuitable for flying, but no details were obtainable as to their landings; while 8 were found unfit by medical boards for various reasons—for example, neurasthenia, heart trouble—apart from or in addition to their eye trouble. If the 6 found unsuitable for flying be added to the 4 definite failures, the figures give 84·5 per cent. successes after appropriate treatment. It is to be noted that the opinion expressed as to the improvement or otherwise in the ability of these cases to land is of particular value, since the candidates in almost all cases were returned to the aerodrome from which they came for treatment, and in many cases to the same instructor.

The sample excerpt of cases given in Table II. shows that after returning from treatment many pilots were eventually posted overseas, some becoming engaged in the difficult work of deck-flying. Dates are given to indicate the length of time improvement may last.

Tests for Neuromuscular Coördination and Nervous Stability.

The tests usually applied to determine the neuromuscular coördination and nervous stability of the subject are:—

(*a*) Self-balancing. The ability of the candidate to stand successively for 15 seconds on each foot, toe pointing to the front, with the other knee bent, legs not touching, eyes closed and hands to side.

(*b*) The power to lift at arm's length a light metal rod placed on a board from the table to the level of the shoulder and replace it without upsetting the rod. (For details see Air Ministry Publication C.A. 1.)

(*c*) Tremor of eyes, tongue, and hands.

(*d*) Knee-jerk.

Wing Commander Bowdler analysed the records of a series of candidates especially from the point of view of the association of signs of neuromuscular instability with failure to train as pilot. With the exception of the records of Group II., which represent pilots and pupils examined at aerodromes by Wing Commander Bowdler and the writer, the observations were obtained either from the original medical examination sheet or from medical reports made subsequently at the invaliding board. A pupil has been considered successful if he has completed his training and obtained his wings; an unsuccessful pilot for the purpose of this report is one who has been declared by the invaliding board permanently unfit for air work or who has crashed fatally.

The cases whose records have been investigated and compared are included in four groups:—

Group I.—1000 accepted candidates who ultimately became successful pilots. Records taken from original medical examination form on admission.

Group II.—93 successful pilots and pupils. Of these 76 had qualified and had considerable flying experience and 17 were successful pupils about to obtain their wings. Records taken on aerodromes.

Group III.—200 accepted candidates who eventually failed to qualify or crashed during training with fatal results. Records taken on admission.

Group IV.—40 pupils under instruction who failed in their training and were declared permanently unfit by the invaliding board. Crashes are not included in this group. Records taken by the invaliding board.

The results of this analysis are shown in Table III.:—

TABLE III.

—	Group I. 1000 successes. Records on admission.	Group II. 93 successes. Records after training.	Group III. 200 failures. Records on admission.	Group IV. 40 failures. Records (invaliding Board.
	Per cent.	Per cent.	Per cent.	Per cent.
Poor equilibration alone	1·6	5·3	8·0	5·0
Marked tremor alone	2·0	6·4	5·0	20·0
Exaggerated reflexes alone	3·9	2·1	2·4	2·5
Combination of two of the signs above mentioned	0·5	0·0	3·0	40·0
Combination of three of the signs above mentioned	0·1	0·0	1·0	17·5
Total percentage presenting signs	8·1	13·8	19·4	85·0

It is shown by this table :—

(I.) That the percentage of cases which gave a bad reaction to the tests is very much greater among the failures—prospective or actual—than among the successes.

(II.) That these signs of instability are more obvious in men who have actually flown, whether they have graduated successfully or have failed, and that therefore they may be regarded as signs of the result of "stress." The results in Group II. are worse than in Group I., and similarly those in Group IV. are much worse than those in Group III.

(III.) A comparison of the percentages presenting the various signs or combinations of signs in Groups I. and III. would appear to show that the presence of poor equilibration or marked tremor seriously diminish a candidate's chances of gaining his wings. Indeed, it is probable that even "fair" equilibration and a moderate degree of tremor are indicative of likely failure to qualify as pilot. Exaggerated reflexes, on the other hand, appear to be unassociated with any abnormal tendency to failure. Combinations of pronounced signs are so rarely observed among candidates who were accepted that the number of cases presenting them in the first three groups is extremely small. Such figures as are available, however, show the inadvisability of accepting candidates exhibiting these signs in combination. This view receives additional support from a consideration of the figures in Group IV., which show the condition as regards these points of 40 unsuccessful pupils on their appearance before the Invaliding Board after failure had occurred.

It is interesting to note that exaggerated reflexes and pronounced tremor occurred in 22·5 per cent. of these cases, exaggerated reflexes and poor equilibration in 2·5 per cent., pronounced tremor and poor equilibration in 15 per cent., and all three signs in 17·5 per cent.

As regards the neuromuscular system, therefore, it may be concluded that: (*a*) Exaggerated reflexes alone appear to have no prognostic value, and their presence may be disregarded. (*b*) Marked tremor and poor equilibration may be taken as signs of poor neuromuscular stability. The case of a candidate who shows one of these signs only should receive very careful consideration. It is justifiable to assume that his chances of making a successful pilot are much less than normal. (*c*) A candidate who shows both marked tremor and poor equilibration is probably unfitted for air work and should be rejected forthwith, unless his condition can be ascribed to some temporary indisposition. The chances are not in favour of his being able to train successfully, and even if this were accomplished, his career as a useful pilot would probably be very short. Under such circumstances the expense to the country, the danger to life involved, and the waste of time to instructors are considerations that render the acceptance of such a candidate unjustifiable.

The Importance of Efficient Circulation and Respiration.

For flying it is particularly important that the "bellows" and "pump" of the human machine shall be working efficiently. As regards the circulation the examination of the successful flying officer has shown that he is possessed of a pulse which gives the impression of a smooth, beautifully working piece of mechanism.

The chief tests applied for testing circulatory efficiency are (1) the comparison of the pulse-rate sitting, at rest, standing, and after graduated exercise (raising the body-weight on to a chair five times in 15 seconds), and (2) the measurement of the systolic and diastolic pressures.

In conjunction with Wing Commander Bowdler, the writer ascertained the value of the above tests upon a number of successful flying officers engaged upon different forms of aerial work at various flying stations. In addition a number of successful and unsuccessful pupils were also examined. The results are given in the following tables :—

TABLE IV.

—	Pulse-rate.		Increase.	Time taken to return to standing rate.
	Standing.	After exercise.		
Flying instructors (29)* ...	87	114	27	20 secs.
Test pilots (17)	84	109	25	25 ,,
Home defence (30)—				
Low	101	126	25	16 ,,
High	85	110	25	18 ,,
Successful pupils (17) ...	85	109	24	21 ,,
Failures (8)	85	121	36	23 ,,

* The figures in parentheses represent the number of officers examined.

Blood pressure.—The average systolic and diastolic pressures in the series are given below. These were taken with the arm at heart level and also with the arm raised through an angle of 120°. Both the systolic and diastolic pressures were taken by the auscultatory method, the systolic pressure being read preferably at the point of reappearance of the pulse (on coming down after previous obliteration by the armlet pressure).

TABLE V.—*Arm at Heart Level.*

—	Systolic pressure.	Diastolic pressure.	Pulse pressure.
Flying instructors ...	120·6	89·3	31·3
Test pilots	121·4	82·8	38·6
Home defence—			
Low	119·1	77·7	41·4
High	122·5	74·9	47·6
Successful pupils ...	115·7	74·1	41·6
Failures	122·1	68·4	53·7

From a consideration of the above observations it was possible to draw the following conclusions :—

(*a*) That the observation of increase of pulse-rate after exercise and the time it takes to return to the rest-rate is a useful method of testing the functional efficiency of the cardio-vascular system. With the method of exercise adopted an increased rate of over 25 and a return period of over 30 seconds are points calling for careful consideration of the candidate's cardio-vascular system. It is to be observed that a rest-rate above normal, especially if influenced by respiration, is not regarded as necessarily throwing doubt upon the functional efficiency of the cardio-vascular system. A pulse of 60 to 72 little raised by exercise (10 beats per minute), returning to normal in 10 seconds is, in our opinion, a good sign, generally associated with excellent physique and good stability of the nervous system.

(*b*) A diastolic pressure below 70 mm. Hg combined with a pulse pressure greater than 50 mm. Hg is strong evidence that a cardio-vascular system is unsuited for air work. From a consideration of blood pressure records the conclusion was formed that stress of service or high flying almost invariably produces in an individual previously fit a low diastolic pressure and a big pulse pressure, due probably to lessening of vaso-constrictor tone of the arterioles.

Application of the above standards among the various groups examined worked out as shown in Table VI. :—

TABLE VI.

—	No. examined.	No. of P.P. over 50.	Per cent. P.P. over 50.	No. of D.P. below 70.	Per cent. D.P. below 70.	No. of men with P.P. 50 + and D.P. 70 −.	Per cent. with P.P. 50 + and D.P. 70 −.
Flying instructors	29	0	0	0	0	0	0
Test pilots	17	4	23·4	3	17·6	2	11·7
Home defence—							
Low	15	3	20·0	1	6·6	1	6·6
High	15	6	40·0	3	20·0	3	20·0
Successful pupils	17	4	23·4	5	29·4	0	0
Failures	8	5	62·5	4	50·0	4	50·0

It should be borne in mind that in the case of pilots recent nerve strain was common, and in the Home Defence Squadrons the pilots were being subjected to fairly constant stress, and there is every reason to believe that with a period of rest these would conform to the requisite standard. The instructors at flying schools and the successful pupils satisfied this test without exception, while four of the eight unsuccessful pupils would have been rejected on the score of cardio-vascular deficiency. The other unsuccessful pupils, it should be observed, were of the nature of the "temperamentally unfit." The test should not be applied rigidly without consideration of other points in the candidate's condition. Indeed, in all subjects failing in the tests, particularly borderline cases, other points (soft abdominal wall, splashing stomach, engorged jugular veins, reflexes brisk or exaggerated, tremors, poor balance, local signs) were considered. In this series it was found that failure to comply with the blood-pressure standard was almost

invariably associated with two or more of these abnormal physical signs.

It may be considered therefore that the ideal pulse for a flying officer has a small range between systolic and diastolic pressures (20–30), with a rest-rate increased at most 20–25 by exercise and returning to the rest-rate in 10–15 seconds.

From the respiratory point of view the subject must be possessed of good vital capacity, good expiratory force. The accessory "respiratory pump" is of particular importance in the airman owing to the fact that his position is frequently somewhat cramped in the machine. Good diaphragmatic action and good tone of the abdominal muscles are essential to ensure adequate venous return to the heart and prevent any tendency to splanchnic pooling. The adequacy of the vital capacity can be calculated from the Dreyer formulæ.[6] It is of interest to note that this falls away with the onset of fatigue, and that this falling-off is associated with a diminution of the supplemental air. In consequence there is an increase in the "residual air," the effect being that a man is very much in the position of a machine running on a "wrong mixture." Such a man becomes a "panter" instead of a deep breather at high altitudes. For the assessment of respiratory efficiency the following tests are employed: (1) the vital capacity; (2) the power to hold the breath after full expiration and inspiration; (3) the height to which a column of mercury can be blown (with the cheeks held); and (4) the time at which a column of mercury can be sustained at 40 mm. Hg, the pulse being counted meanwhile.[7]

Experience has shown that although designed primarily as tests for respiratory efficiency these tests (particularly Test No. 4) have also great value in aiding the formation of an opinion as to the stability of the nervous system and the efficiency of the circulatory system. They are also of service in aiding the making of an assessment of the mentality of a subject.

Tests to be Taken as a Whole.

It should be remembered that these tests were devised to serve as adjuncts to the general clinical examination. It has been found that some purely temporary cause may be the reason of failure in some of the tests, and for this reason attention should be directed to the subject's performance as a whole rather than to failure in any one particular test. It is also of the greatest importance that the tests be carried out exactly as specified in the directions, and that it be carefully observed whether the subject is really trying to do his best. Results obtained from an individual who is not trying are of little value beyond showing that at the moment he is not "keen," and therefore, to that extent, not thoroughly efficient.

Various considerations led the writer to the conclusion that the first breakdown in the bodily systems is frequently associated with the respiratory mechanism which, becoming defective in working, reacts owing to inefficient respiratory ventilation upon the cardio-vascular and nervous systems, thereby bringing out secondary signs of cardiovascular and nervous debility. In support of this view it should be stated that early on it was observed that pilots stated to be suffering from stress suffered from breathlessness and manifested inability to blow hard or expire deeply. Investigations were therefore made into the condition of the respiratory mechanism of successful and unsuccessful pilots. The first test devised was that of holding the breath. Preliminary figures obtained from successful pilots showed that on an average these officers could hold their breath under the conditions of the test for 69 seconds, whereas many officers who were attending medical boards owing to their inability to fly high could hold the breath, generally speaking, but 20 to 40 seconds, the performance being attended usually with a considerable degree of discomfort.

Table VII. gives the figures obtained in various groups of officers.

TABLE VII.

Subjects.	Number examined.	Breath held in secs.*	Vital capacity in c.cm.	Supplemental air in c.cm.	Expiratory force in mm. Hg.	Sustaining 40 mm. Hg.
Fit instructors...	22	67 46†	4062 3300	1620 1000	112 80	32 43
Home defence pilots‡...	24	72	3940	1496	119	50
British candidates	23	69	3823	1590	106	52
U.S. candidates ...	7	66	3814	1386	116·4	53·5
Delivery and test pilots	10	57	3620	1050	108	40
Pilots returned for rest	17	57	3897	1423	95	40
Pilots training for scouts	15	62	3820	1433	96	49
Pilots taken off flying through stress	27	49	3480	1134	74	25
Hospital cases ...	55	54	3560	—	87	35·5

* Average (with the exception noted). † Minimum.
‡ One or two suffering from stress included in the table.

From the above figures it is seen that for the expiratory force test 80 mm. Hg should be taken as a minimum. For the test of sustaining 40 mm. Hg with the breath held 40 seconds should be regarded as the minimum time. It was found that these tests in combination were of use in indicating the powers of endurance of the subject for high or prolonged flying and also of value in assessing the degree of shock sustained by a pilot in so-called "minor" crashes. It is of interest that by it during the stage of investigation a number of subjects found unfit at the Aviation Candidates Board were also found unfit on this test.

It is believed that the above results show that in the selection of the flying officer by the medical officer much may be done by submitting him to an overhaul as regards normal performance in much the same way as an aeroplane is examined as to its efficiency by a technical officer. Evidence is also brought forward to show what attributes are especially to be sought in the selection of a successful flying officer.

[6] THE LANCET, August 9th, 1919.

[7] For details see Air Ministry Publication C.A.1; also THE LANCET, Feb. 8th, 1919.

SOME REMARKS ON
FOOD VALUES IN TUBERCULOSIS.

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THIS is to some extent an empirical paper. It is well known that the philosophy of diet has grown up almost in a night; apart from this it is in the memory of the writers of this paper that during the last 20 years there have been various phases in the teaching of the treatment of tuberculosis by diet. About 1900 the Strasbourg geese method was generally accepted. Even then Clifford Allbutt with his usual clarity of mind sounded a note of warning. At the International Tuberculosis Congress—the Congress at which Koch enunciated at Queen's Hall his later opinion on bovine tubercle—Allbutt was advising that whilst a tuberculous patient with fever should not be treated as a fever patient, still more, he should not be stuffed to repletion by masses of food which he was incapable of transforming into energy. His advice was that the patient on first coming under the notice of a sanatorium physician should be fed on a spare diet, which should be increased as the physician gauged the assimilative powers of the patient. Later it became plain to all that a mountain of fat might conceal a mole-hill of muscle, and that fat stored up at the sanatorium rapidly melted away in the workshop, leaving the

patient in a state of physical exhaustion and mental depression at his apparently rapid relapse.

Walther told one of us that the principles which guided him in the dieting of his patients were: first, to remember that they had lost weight and the loss must be replaced; second, that the loss was still going on and extra food was obviously required day by day to replace this loss; third, that the everyday wear and tear normal to the human machine must be met by an amount of food also normal for a healthy person of similar bulk to the patient in question. He knew nothing of vitamines nor of the action of calcium or potassium salts, but he knew and spoke of the sandwich, the bread, the butter, and the meat as the main therapeutic agent in the war against tubercle.

Production and Maintenance Rations.

Two terms are of special importance in considering the diet of a tuberculous patient; these terms are production ration and maintenance ration. It is desirable to think of these terms, and indeed in these terms when we consider, say, the growth of a young child, the well-being of a pregnant mother, the needs of the mother and the child when the child is at the breast, and also the welfare of a patient suffering from tubercle. In each case there must be given a maintenance ration to neutralise ordinary waste and produce ordinary energy and an excess or production ration which will supply material for growth or meet the needs of special waste. In the production of cow's milk these principles have been recognised after much scientific research, and stabilised diets have resulted. There is a definite ratio between the weight of the animal and the digestible protein and digestible starch equivalent that she requires. For every 1000 lb. of animal, live weight, 0·75 lb. of protein and 6·25 of digestible starch equivalent are required per day. For the production of milk add 0·65 digestible protein and 2·50 starch equivalent for each gallon of milk given by the animal. If this production ration is not supplied the animal either draws on its own reserves, gets out of condition, and loses weight, or the milk yield quickly drops.

In the case of the tuberculous patient a counterbalancing increase of diet is required unless he is to lose ground. The average requirement of a normal working man may be taken as 3400 calories per day. The voluntary ration advised by the Food Controller during the war only provided for about 2100 calories per head per day.

War Ration for Tuberculous Patients.

Under these adverse circumstances the Food Controller, prompted by medical advice, recognised that the ration for the tuberculous patient should be considerably above that of the average individual. At the same time the Local Government Board published a diet scale allowing 3750 calories per head per day to all male sanatorium (tuberculous) patients over 10 years of age. It is true that this was the fixed maximum allowance but it was a significant admission. For the medical and nursing staff a less generous diet was suggested, though this diet was again above that of the average individual and was equal to 2490 calories.

Since January, 1917, careful records have been kept of the weight of food consumed each week at Gateforth Sanatorium, and the number of calories per head per day correlated with the weekly alteration in the weight of the patients. Throughout the whole period these figures have kept almost constant. The calories per head per day occasionally fell during the summer months as low as 3300, and in the winter once rose as high as 3800; but the daily average throughout the three and a half years of the investigation was 3556. This figure is well within the Local Government Board maximum, but certainly in excess of the normal food-supply of persons engaged in sedentary or light muscular work. This supply answered physiological demands. We had as patients very few women and no children. The men were engaged during three hours of the day in light gardening. The food was scarcely ever really restricted, though some items were necessarily limited in quantity, their place being taken by other substances. There was thus considerable thought given to the question of diet, and personal likes and dislikes were never ignored. On this diet, to a great extent one of personal—that is, instinctive—choice, the patients did extremely well, their calamity being greatly modified. There was an almost universal gain in the individual body weights. So far our dietetic diagnosis was successful.

Comparisons of National and Sanatorium Diets.

Let us take another point of view. From the official figures published by the Food (War) Committee of the Royal Society as a command paper (Ed. 8421) at the request of the President of the Board of Trade, it is seen that during the five years 1909–13 inclusive cereals provided 34 per cent. of the total energy value of the nation's food; potatoes and other vegetables, 20 per cent.; sugar, 13 per cent.; meat, 18 per cent.; and dairy produce, 15 per cent. Now at Gateforth cereals, sugar, potatoes, and other vegetables provided a much lower percentage of the total work-producing power, and the meat and dairy produce a much higher percentage.

—	Percentage of work-producing power contributed by various classes of food.			
	United Kingdom 1909–1913.	Gateforth 1917–1920.	Rationing scheme for	
			Consumptive patients.	Resident sanatorium staff.
	Per cent.	Per cent.	Per cent.	Per cent.
Cereals...	34	30	30	35
Sugar*	13	9	7	9
Potatoes	10	4	5	8
Fruit and vegetables	10	3	4	3
Meat†	18	24	22	18
Dairy produce‡ ...	15	30	32	27

* Includes treacle and jam.
† Includes beef, mutton, pork, bacon, eggs, poultry, game.
‡ Includes milk, cream, butter, cheese, margarine.

The great difference between the Gateforth diet and the diet outside evidently lies in the fact that the former is richer in protein and fat than the latter.

Necessity of Increased Protein Content.

It comes to this, that if the patient is wasting there must be a high percentage of nitrogenous food in his diet. Again, as T. B. Wood and F. G. Hopkins[1] have pointed out, protein, apart from its flesh-forming power, directly stimulates the metabolism of all foods, and therefore of non-nitrogenous varieties. Carbohydrates have not this power. Protein has a lower fuel value than starch or fat. The figures are, taking starch as 1: protein, 0·94; fat in oil seeds, 2·4; fat in cereals, 2·1. Increased protein content must be provided. A man doing heavy work under stress or exposed to cold requires a comparately large amount of protein in his diet. The same rule applies to a man suffering from a wasting disease.

Of 1944 observations in the case of urban industrial families, the protein content per head per day amounted to 98 g., or 3·5 oz. Munition workers (18,000 observations in 1917) consumed 115·7 g., or 4·1 oz., per head per day. The maximum weekly ration sanctioned by the Local Government Board for patients over 10 years of age and suffering from tuberculosis, would supply 144 g., or 5·1 oz., of protein per head per day. The ration allowed to the resident staff was less rich; it supplied 92 g., or 3·3 oz., per head per day. The Gateforth diet (three and a half years' investigation) allowed 133 g., or 4·7 oz., of protein per head per day.

Fats in Tuberculosis.

Tuberculous patients require a rich fat diet. Fat is highly assimilable and almost entirely absorbed from the alimentary canal; it is more slowly digested and absorbed than are carbohydrates. The most intense absorption of fat occurs five hours after a meal; the starches have been absorbed in three and a half hours,

[1] Food Economy in War Time, p. 8.

and starchy foods thus give a sense of repletion directly after a meal and a regretful sense of emptiness five hours later; the fats have a greater staying power. It is an old and wise tradition that fat-eaters are more piously contented with existence than those who abhor fat. Again, if one wishes to give a person undergoing much strain from work or disease a more than generous amount of food he is given average diet, and fats and protein are added in more than average proportion; but if carbohydrate is piled on carbohydrate the result is flatulent fermentative dyspepsia and even physical exhaustion. Fats are tabloids of concentrated food, undiluted with water. They have more than double the calorific value of any alternative food. The question of bulk is of importance, as the alimentary capacity has its limits. E. H. Starling states[2] that fat should compose from 20 to 25 per cent. of the whole diet.

Summary.

(1) We find that tuberculous patients require more food than the average amount needed by the ordinary labourer outside. The minimum for Gateforth patients contains 3500 calories, the patients being almost invariably adults.

(2) The diet must be rich in protein and fat—protein, 4 to 4½ oz. per head per day; fat, 4 oz. per head per day. We consider that the fat should be largely animal fat, particularly in the form of milk and milk products. If margarine is used it should be as oleo-margarine and not made from vegetable fats.

(3) Eggs should be in the dietary, and when they are not supplied their place should be taken by an extra amount of meat given according to accurate calculation.

(4) Whole-meal bread, beans, peas, and lentils should always be used, together with a plentiful supply of fresh fruits and vegetables grown in the sanatorium grounds.

(5) Two pints of milk per day is the amount we suggest for each patient, and we draw attention to the following facts:—

In the final report on the production and distribution o milk (Cmd. 483) it is pointed out that 0·25 pints per head per day is the average amount of milk used in Great Britain, although this amount is increased by the use of condensed and other forms of preserved milk. This amount is inadequate, but from the daily milk allowance at Gateforth (namely, 2 pints per head) we get 25 per cent. of the calorific value of the total food supplied, 33 per cent. of the total protein, 36 per cent. of the total fat, and the following percentage of the total vitamines: 75 per cent. of the total food rich in fat soluble A; 63 per cent. of the total food rich in water soluble B; and 65 per cent. of the total food rich in antiscorbutic principles.

Can the importance of a plentiful, clean, rich, milk-supply, not only to the patient in the sanatorium but to the multitude outside its gates, be further emphasised? We have seldom needed to depart from a routine diet based upon the principles and rules of experience set down in the foregoing pages. Raw-meat feeding has not been carried out at Gateforth, although it is sometimes prescribed in the sister institution at Armley. Again, in the very few cases of hæmoptysis met with at Gateforth diet has been reduced to the traditional drastic minimum of hospital practice, the sufferers being transferred as soon as possible to a more suitable institution.

[2] Brit. Med. Jour., August 3rd, 1918, p. 105.

A MEDICAL MAYOR.—**Mr. Arthur Charles Roper**, honorary surgeon to the Royal Devon and Exeter Hospital and Exeter Eye Infirmary, has been nominated as Mayor of Exeter.

SALARIES OF SCHOOL MEDICAL OFFICERS.—At the last meeting of the Devon Education Committee it was decided that the salaries of school medical officers should in future be £500, increasing to £600 per annum by annual additions of £25. It was also determined that the salary of the present medical officers be raised to £500 a year, as from April 1st last, and that the travelling allowance be raised from £175 to £200 per annum.

SYMPTOMS RESEMBLING TABES DORSALIS

ARISING AFTER ANTITYPHOID INOCULATION.

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THERE is ample evidence that the low percentage of cases of enteric fever in the British army during the recent war was due to systematic inoculation with anti-typhoid vaccine, and also that in the vast majority of cases such inoculation was quite harmless. Large doses of the vaccine are well tolerated by healthy persons, but this is not always the case in persons who have some morbid taint. The vaccine may light up a latent tuberculosis, may cause a rise of temperature, and a recrudescence of intestinal symptoms in persons who have suffered from enteritis, and may lead to the development of albuminuric retinitis in the subjects of Bright's disease.[1] Meyer has recorded a sudden death due to œdema of the glottis after inoculation in a case of status lymphaticus.[2] Very rarely symptoms of disease have been observed to develop in previously healthy persons soon after inoculation. The sequence, of course, may have been accidental, the observed illness being due not to the vaccine but to some other agent. A critical investigation of every case is essential, but even then it may be difficult or impossible to decide as to the cause of the illness. The absence of satisfactory proof, however, neither detracts from the interest of the association, nor lessens the necessity for putting it on record.

Sequelæ of Antityphoid Inoculations.

Before describing a case recently under observation, I will briefly allude to some communications by French physicians, in which cases of nervous sequelæ of anti-typhoid inoculation are described. In nearly all the triple vaccine known as T.A.B. was used, and the symptoms appeared suddenly within a few hours of the vaccination. Two cases with signs of cortical thrombosis are reported by Roussy and Cornil[3]:—

1. A sensory disturbance of the left arm with ataxia developed on the day after a third injection of T.A.B.; the disturbance was of cortical type and corresponded to the description of cortical lesions given by H. Head and G. Holmes. There was slight tremor of the left hand and movements of the fingers resembling those of athetosis. The motor power was not impaired; slight muscular atrophy developed for a time,

2. The patient fell unconscious after a first injection of the same vaccine. He was found to have right hemiplegia, total aphasia, and signs of meningeal reaction. Six months later there was a typical residual hemiplegia with dysarthria.

In both cases the Wassermann reaction was negative. The authors think they were justified in regarding the inoculation as the cause of the cerebral lesion. Seven cases are recorded by Souques[4]:—

1. A man, aged 41, was found in a semi-comatose condition with right hemiplegia and aphasia a few hours after a second injection of an anti-paratyphoid A and B vaccine; he remained semi-conscious for about a week. Hemiplegia and dysarthria were present 18 months later. Syphilis and alcohol were excluded.

2. A man, aged 35, was suddenly seized with headache, pyrexia, and vomiting three hours after a fourth injection of anti-typhoid vaccine. A year later there was right-sided paresis together with other symptoms which pointed, in the author's opinion, either to a unilateral cerebellar disturbance or to disseminated sclerosis.

3. A man, aged 33, almost immediately after a fourth injection of T.A.B., began to suffer from violent headache and other meningeal symptoms. Eight months later there were no objective signs of a cerebral lesion, but the patient complained of constant headache and was very irascible and indifferent to the conduct of his affairs; he also suffered from marked amnesia. The Wassermann reaction was negative.

4. A man, aged 38, previously healthy, had a genuine epileptic fit during the night following the day when he had a second injection of T.A.B. vaccine. Subsequently other fits occurred and always during the night.

5. A man, aged 19, a few hours after a second injection of T.A.B. vaccine, became feverish, vomited, and had a stiff neck. Four months later he suffered from constant headache. The Wassermann reaction was negative.

6. A man, aged 21, after a single injection of antityphoid vaccine, developed severe headache and vomiting; the vomiting continued for a month, the headache during the four months he was under observation.

7. A man, aged 41, after a third injection of the vaccine, noticed that the right side of his neck was getting larger; four months later his eyes were unduly prominent and his hands trembled. Graves's disease was diagnosed and marked signs of this disease were present

two years later. Souques believes that there was a causal relation between the inoculations and the sequelæ, but offers no explanation of the association.

A fatal case of acute ascending Landry's paralysis is reported by Guillain and Barré,[5] death occurring nine days after a fourth injection of 1½ c.cm. of T.A.B. vaccine. After a full consideration of the case the authors conclude that the vaccination was in some way the exciting cause of the paralysis.

The Author's Case.

The following is a brief clinical account of a patient under my own care:—

History.—J. W., aged 36, was admitted to Brinnington Hospital on June 22nd, 1920. He enlisted in August, 1914, and became an orderly in the R.A.M.C., stationed at Woolwich. He had always enjoyed good health. Towards the end of January, 1918, his left arm was injected with antityphoid vaccine without any ill-effects. A week later he was inoculated a second time. In a few hours he began to feel sickly, and on getting out of bed the following morning his legs gave way and he fell on the floor. He was helped up and put to bed. A doctor saw him the next day and told him to get up and fight it out. He could get up but could only walk by catching hold of objects near him; his hands also were helpless and he frequently dropped things he was carrying. He states that although he has had various kinds of treatment there has been no improvement in his condition, which is now much the same as it was two years ago. About 18 months ago his blood and cerebro-spinal fluid were examined; both gave a negative Wassermann reaction. On admission to hospital he complained of headache, a burning feeling down the spine and in the abdomen, and of weakness of the left leg; he said his left foot often turned over (inversion) and threw him down.

Symptoms.—These have not varied much during the last three months, and are as follows. All movements of left leg weak; resistance to passive movement at ankle, knee, and hip much impaired. Muscles of both legs flaccid, showing a slight or moderate degree of hypotonus, as when the limb is raised with knee extended. Marked incoördination of both arms and legs. When his eyes are closed his attempts to touch the tip of his nose are very imperfect, especially with a finger of the left hand; Romberg's symptom well marked; gait ataxic. Cutaneous sensibility appears to be slightly impaired over whole of left side. Knee-jerks, examined many times, have always been sluggish; right jerk, the weaker of the two, sometimes impossible to elicit; ankle-jerks also sluggish; right jerk very feeble. Abdominal reflexes have never been obtained; plantar reflex, flexor in type, very feeble and often absent. Micturition delayed, slow, and prolonged. Sexual functions impaired; he states that he has not had an erection since beginning of illness. Pupils are unequal in size, right pupil being smaller than left; both react to light and accommodation, but right pupil not so well as left. Mental condition excitable; he tends to exaggerate his symptoms, and states that his memory is very bad. Blood and cerebro-spinal fluid, again examined, gave a negative Wassermann reaction. Psycho-therapy, but not including hypnotism, with many attempts to re-educate the movements of his limbs, have been tried without success.

Diagnosis of the case is difficult. The ataxia, the hypotonus, the unequal sluggish knee-jerks, and the unequal pupils strongly suggest tabes; the Wassermann reaction, however, is negative. If the symptoms of tabes should become more distinctive then the old question will arise—namely, Can true tabes ever occur apart from syphilis? My answer is that I have seen cases which presented symptoms indistinguishable from those of tabes in which syphilis, so far as our present tests go, could be absolutely excluded; such cases, however, are very rare. Hysteria has been fully considered; there is much in the man's behaviour and conversation to support that diagnosis. Experience of the psycho-neuroses during the war has tended to widen the range of hysteria, to lead us to regard many symptoms as hysterical which formerly were thought to depend on definite lesions in the nervous system; we are finding an increasing difficulty in separating "functional" from "organic" disease. Even the ataxia, or at least some of it, in cases of genuine tabes, may be psychical in origin. But hysteria alone can scarcely account for such objective signs of disease of the nervous system as are present in the case described.

References.—1. Bussy: Lyon Méd, 1919, p. 20. 2. Meyer: München. med. Wchnschr., 1919, p. 261. 3. G. Roussy et L. Cornil: Rev. Neurol., 1919, p. 453; also G. Roussy, p. 505. 4. A. Souques: Rev. Neurol., 1919, p. 501. 5. G. Guillain et J. A. Barré: Rev. Neurol., 1919, p. 595.

SURGICAL TREATMENT OF MALIGNANT DISEASE OF LIP AND JAW.[1]

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I PROPOSE to consider certain factors connected with the lesions indicated in the title of this paper. More particularly do I wish to lay stress upon the best means to be adopted for the eradication of the disease, the restoration of function and the prevention of deformity.

I will first consider malignant disease of the lip, and bring to your notice certain interesting facts connected with its incidence. In a recent paper[2] A. C. Broders gives certain statistical data compiled from a series of 537 cases. He divides epithelioma of the lip into four grades, according to the differentiation of the cells. The least malignant type is that in which differentiation is most pronounced, whereas lack of differentiation indicates the quick growth of more pronounced malignancy. The microscopical appearance is of little value as an indication for treatment, but may be of considerable value from the point of view of prognosis.

Relative Incidence.

The relative rarity of the disease in females is an outstanding feature. In Broders's series of 537 cases the male patients number 526, whereas only 11 were females, a proportion of 49 to 1. C. Rowntree recorded particulars of 241 cases, males affected being 233 and females 8, a proportion of 29 to 1. In the Cancer Hospital malignant disease of the tongue in women is sufficiently uncommon. Malignant disease of the lip is even more so, and our experience here suggests that the proportion indicated by Broders is more nearly the correct one. Epithelioma of the lip again is a lesion of advanced age; thus in Broders's series the youngest case was 21 years of age and the oldest 97, with an average age-incidence of 57·3. In Rowntree's series the youngest patient was 29 and the oldest 81, the average age being 56·4.

A large proportion of people affected are connected with outdoor activities, Broders noting that 68 per cent. were thus employed. In a number of cases, too, the malignant lesion is preceded by a sore or ulcer. The freedom of the upper lip as compared with the lower is very striking; the lower lip is affected in 96 per cent. of the cases, the remaining 4 per cent. being those cases in which the upper lip and the angles of the mouth are the sites involved.

Ætiology and Duration.

The lesion is usually situated to one side or other of the middle line, and shows a marked predilection for the muco-cutaneous surface. In those cases affecting the free border of the lip the influence of syphilis would appear to be a negligible factor. This is in marked contrast to the findings in malignant disease of the tongue, where a definite history of syphilis can be elicited in something like 95 per cent. of the cases.

In those cases, however, in which the buccal surface of the lip is primarily affected the syphilitic history, or a definite preceding syphilitic lesion, plays a larger part as an ætiological factor. In four-fifths of the cases patients are addicted to smoking, and in a large proportion of these the method employed is the pipe—frequently clay of the unglazed variety. The relationship of clay-pipe smoking to epithelioma of the lip is demonstrated by F. L. Hoffman in his work on "Mortality from Cancer throughout the World." He states that in the district of Columbia the negro women smoke clay pipes, a habit which is practically unknown among the white population. At ages over 40 8·4 of 100,000 of the black population are afflicted with mouth cancer, whereas only 3·3 of the whites are similarly affected. At ages over 70 the incidence of malignant disease in the blacks increases to 30·1, as compared with 8·6. In this connexion it is interesting to note that the incidence of cancer of the lip undergoes no diminution in old age, such as is

[1] A post-graduate lecture delivered at the Cancer Hospital.
[2] Journal of the American Medical Association, March 6th 1920.

universally observed in cancer affecting other sites. The average duration of the disease is remarkable in view of the fact that it affects a part of the body so easily open to notice. In Rowntree's series the average duration is one year and nine months; in Broders's series two years and six months, the longest period of duration noted being 28 years. In many cases, undoubtedly, the inconvenience occasioned in the early stages of the disease is so slight that patients do not trouble to seek medical advice. On the other hand, typical characters associated with malignant disease are so frequently wanting in the early stages that it is possible that practitioners consulted fail to recognise the initial character of the lesion. Any sore or scab on the lip of a person at or over middle age should be regarded with the greatest suspicion, no matter to what extent it may lack the typical characters of a malignant ulcer.

Diagnosis and Indications for Treatment.

The question of differential diagnosis is not difficult, for the only lesion from which epithelioma must be differentiated, apart from simple ulcers, is a primary chancre. The condition of the glands will readily serve to distinguish the one from the other lesion.

In the case of a primary chancre glandular enlargement becomes obvious in six weeks, whereas obvious glandular enlargement in epithelioma is an occurrence of a much later date. Microscopical examination of cases submitted to gland operation will frequently show these structures free from invasion. This freedom is dependent on the duration of the disease and the type of growth as indicated by the microscopical characters of the initial lesion. Broders found that in 449 cases submitted to a gland operation 334, or 76·62 per cent., were free from metastases. Metastases were found in the remaining 105 cases. Of these, only 12 were known to be living, 10 of whom reported a good result. A microscopical examination of the glands removed at operation constitutes, therefore, a valuable basis for prognosis. This must be very guarded in cases where metastatic deposits are demonstrated.

Important indications for treatment emerge from a consideration of collected cases of recurrence.

Seventy-seven recurrences were investigated by Rowntree, and of these only 7 were initially subjected to a gland operation. Of the latter, 1 recurred in the lip, 1 in the submaxillary region, and 5 recurrences were noted in lip and glands alike. In the 70 cases in which operation was restricted to local excision, 20 recurred in the lip only, 20 recurred in the lip and glands, and 30 recurred in the submaxillary glands only. Thus out of 77 cases local recurrence was noted in 46. This high proportion of local recurrence is in marked contrast to that which obtains in the case of the tongue, where local recurrence is a rare event. It would appear that local excision has been practised on far too niggardly lines, and I have no hesitation in stating that the conventional V-shaped excision should rarely be advised or practised. It is possible that an undue fear of deformity has led to the perpetuation of this too limited removal. This fear should have in the present day no influence in deciding the scope of the operation. True it is, that bringing the parts together in an operation planned on broader lines would inevitably lead to unseemly deformity and determined loss of function. A planned procedure for the reconstitution of the lower or upper lip, as the case may be, must be undertaken.

Plastic Surgery in Military and Civil Practice.

In the case of war wounds plastic surgery of the lip, as of all other facial defects arising similarly, is the plastic surgery of residual deformities. In other words, the responsible wounds have necessarily been allowed to cicatrise before any operative procedure to remedy the defect can be undertaken. This limitation is a matter most emphatically not of choice but of necessity. In the process of healing scar tissue is formed radiating to a variable extent according to the conformity and severity of the wound into the surrounding tissues, thereby diminishing their nutrition and leading to a loss in them of elasticity and plasticity which are their normal attributes.

The natural tendency of scar tissue to contract leads, moreover, to a displacement of the mobile soft tissues toward the nearest fixed point in their neighbourhood. The effect of this is to destroy contour and distort expression, for expression must obviously be determined by the changing disposition of mobile parts of the face brought about by muscular action. Contraction of scar tissue causes adhesion of mobile lips to fixed alveolus, distortion of the angle of the mouth, and, when allowed to do so, limitation of the movements of the mandible upon the fixed maxilla. In war surgery of the face these unfavourable conditions are necessarily present and are determined by the character of the injuries sustained. These conditions are not necessarily imposed upon the surgeon who operates for malignant disease, provided that excision and reconstitution are undertaken at the same time. It will be clear that it is greatly to the advantage of patient and operator alike that the pitfalls and difficulties associated with the plastic surgery of residual deformities should be avoided whenever and wherever possible.

To sum up, the operator who undertakes the surgical treatment of malignant disease of the face and jaws should have developed the necessary technique in plastic surgery to be able himself to build up what he has destroyed and restore a facial expression that he has distorted.

Methods Adopted by the Lecturer.

The diagrams will illustrate two methods adopted by me for restoration of the lower lip after wide excision for malignant disease. The most frequent method adopted has been that advocated by Dowd. I have myself employed this method on several occasions, but have not been satisfied with the cosmetic and functional results obtained. I therefore abandoned it in favour of one or other of the methods illustrated. A practical point of importance which determines a further difference between the plastic surgery of war injuries and the plastic surgery of malignant disease is that care must be taken lest as much be expected from the man of 50 as can be confidently looked for in the young, healthy soldier of 25. In the young soldier the limit of nutrition was, in my experience, never reached in dealing with the tissues of the face and upper part of the neck. This is emphatically not so in the case of the man or woman past middle age, whose vessels are thickened and whose general constitutional condition has passed its zenith and has started on the downward slope. As illustrating this particular point, it may be observed that the second method, pictorially demonstrated, is on that account unsuitable for the more elderly patients. Both methods, however, are alike in this, that the angle of the mouth is formed, as it should be, by rotation and not by the junction of mucous membrane to skin along a linear slit. Dowd's operation, in addition to being somewhat primitive in its conception, fails in many cases to provide a continent angle, with the inevitable result that lip control is defective and dribbling, perhaps slight in amount, constantly occurs.

Another factor that must be considered in relation to nutrition is the vascular emasculation to which the tissues of the neck must be subjected in any operation undertaken for the removal of glands. Removal of glands should be undertaken in every case, for although freedom from glandular invasion may persist even for years the occurrence of the latter is always to be dreaded. Rowntree records a case in which the submaxillary glands were affected 11 years after the primary operation for local excision. Equally, too, it is impossible by ordinary physical methods to determine whether glands are infected or not, and there is no question but that the percentage of cure would, in this particular type of malignant disease, be greatly increased if, in addition to wide local removal, the fat and glands in the regions subject to infection were removed in every case. The operation in the neck should be undertaken as a secondary procedure after the local excision and repair of the lip have been completed, and it is only necessary further to consider the question of extent. The groups of glands affected are in order of frequency, submaxillary, submental, and upper carotid. It has been noted on many occasions that the glands first palpably affected have been the submaxillary group on the side opposite to the lesion. Jameson and Dobson in the current number of the *British Journal of Surgery* point out that the efferent lymphatics of the submental glands pour their lymph indifferently into the submaxillary glands of either side. The apparent anomaly just alluded to is thus satisfactorily explained. Further, it is a powerful argument in favour of the removal of the lymph-draining areas not only on one but on both sides of the neck.

Tumours of the Jaws.

I propose now briefly to discuss some of the commoner tumours of the jaws. The most common tumour occurring on the alveolus of both jaws is the epulis. This may be a pure fibroma arising from the alveolodental periosteum, or myeloid sarcoma originating from the alveolus itself. The simple fibrous epulis presents

a small prominent tumour, generally in the incisor region, may be pedunculated, but is more often sessile, is firm to the touch, does not bleed readily, and has a colour very similar to that of the normal gum. The myeloid epulis is apt to assume larger proportions, tends to produce displacement of the neighbouring teeth, is softer to feel, bleeds more readily, and is of a deep maroon colour. Both tend to reappear unless removal is adequate. In most cases even the fibrous epulis demands for efficient removal the extraction of the teeth on each side, together with the destruction of the alveolar septum. In every case these steps are necessary for the removal of the myeloid form, and should the tumour have attained any considerable size a deliberate removal of the surrounding bone is required. In the case of the mandible, the basal margin should be left to preserve continuity and rigidity, for this tumour, as in the true myeloid type in the long bones, lacks the essential characters of malignancy.

One of my cases was a very fine example of an epithelial odontome. This type of tumour may make its appearance at any time after the age of 12, is commonly situated in the molar region of the mandible, grows slowly, may attain a large size as in the present instance, is partly solid and partly cystic, is perfectly innocent, but may nevertheless impose upon the surgeon the necessity of removing that portion of the mandible which it has involved. This tumour was described many years ago by the late Sir Frederick Eve, but its pathology was not then appreciated and was designated multilocular cystic disease. It has been definitely shown since then that the tumour originates from the enamel organ, and in its microscopical structure reproduces the tall columnar epithelium of the enamel forming ameloblast and the loose conformation of the stellate reticulum.

Upon casual observation one fails to discern any facial deformity in the patient from whom this tumour was removed. Functionally, too, her condition is quite satisfactory. She is wearing an upper and lower denture, which by an arrangement of interlocking flanges prevents any lateral deviation of the sound half of the mandible. Articulation, then, has been normally maintained, and mastication is little, if at all, interfered with, for she is able to deal satisfactorily with all the constituents of an ordinary mixed diet.

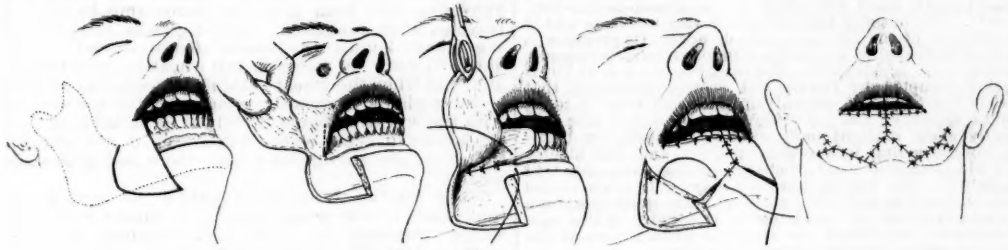
The epithelial odontome is one of many odontomata which affect the jaws. Many of these are so rarely encountered as for practical purposes to be ignored. Two, however—the dentigerous cyst or follicular odontome, and the dental cyst—are tumours which occur in the mandible and maxilla with some frequency.

These tumours have certain characters in common. They expand the jaw slowly, and when attaining a size sufficient to thin their embracing walls give rise to that physical sign known as egg-shell crackling. Both may attain considerable size, and when affecting the upper jaw may encroach upon the cavity of the antrum. The follicular odontome contains embedded in its wall a more or less well-formed tooth or denticle, comprising fully developed dental structures, and as its name implies, is associated in its formation with the dental follicle or tooth sac.

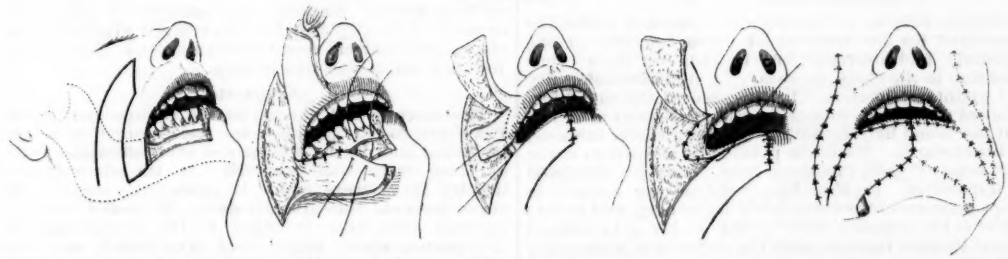
The dental cyst, although presenting similar clinical characters, encloses nothing but fluid contents. The origin of these cysts is somewhat obscure. They are frequently associated with a tooth whose pulp has died as a result of septic infection, conveyed either by direct invasion through a carious cavity or indirectly by an inflammatory lesion of the alveolo-dental periosteum. A definite epithelial lining can be demonstrated in some, and in these, at any rate, it is not unreasonable to assume that their origin is connected with the remnants of the enamel organ embedded in the paradental membrane. The dental cyst occurs more frequently in the upper jaw, and both dental and dentigerous varieties are more commonly met with in the incisor and canine regions.

Another type of tumour—periosteal fibroma—is somewhat uncommon and may be difficult to distinguish from periosteal sarcoma.

METHOD 1.



METHOD 2.



The sarcomata, however, are rare before the age of 15, with the exception of that form of endosteal sarcoma which arises in children in association with the mesoblastic structures—in other words, the dental papilla of the first permanent molar. [Such a periosteal sarcoma was shown in a half mandible removed from a little girl aged 8 years, in which, although the tumour had attained a considerable size, the mandible, shown by a cross-section, preserved its normal outline embedded in the substance of the tumour.] The same points will be seen exemplified in this little child as in the case of the adult patient—viz., absence of deformity, maintenance of correct articulation, and little, if any, diminution in masticatory power.

Periosteal sarcoma of the jaws, mandible and maxilla, as in the case of the long bones, is a most malignant tumour, and prognosis, even after the widest possible removal, is very grave.

True endosteal sarcoma of the round-celled or spindle-celled type is met with as a definite tumour in the lower jaw. Their conformation is, however, different from that of the periosteal type.

The endosteal expands the bone, the periosteal surrounds it, and it may thus readily be deduced that the X ray appearances are of considerable value as a means of differential diagnoses. Further, alveolar ulceration takes place in the endosteal type before the tumour has attained any great size, and rate of growth is relatively slow. Ulceration thus occurring on the alveolar aspect exposes a soft area resembling granulation tissue, which bleeds when touched. The outlook in such cases is far more favourable than in the periosteal group, and this particular patient shows no sign of recurrence after a period of two years.

Periosteal sarcoma in the maxilla rarely attacks the facial surface. It may, however, originate from the muco-periosteum of the antrum or invade that cavity from outside. Its course is then determined by the anatomical conformation of the region. Thus it may spread inwards to the nose, downwards to the palate, backwards to the zygomatic and temporal fossæ, through the spheno-maxillary fissure into the orbit, and through the sphenoidal fissure to the base of the brain.

In this course it is mimicked by simple or malignant tumours, which, arising in the naso-pharynx, push their way into the antral cavity. In a case of a maxilla thus invaded and distorted an angeio-fibroma arising in the naso-pharynx produced great disfigurement by insinuating its mass in the directions thus indicated.

[The patient was a boy, aged 14, and photographs taken after the removal of the maxilla and the insertion of a suitable obturator showed how little need be the disfigurement occasioned by a proceeding of such magnitude. The operation was performed by Mr. Joseph Cunning, and after-treatment was conducted by Mr. C. H. Bubb.]

Another type of tumour affecting the antrum is the carcinoma. Although the antral cavity is lined by ciliated columnar epithelium it is curious to note that any other type than the squamous carcinoma is very rarely met with. It is possible that this tumour, too, originates from the enamel organ islets embedded in the alveolo-dental periosteum. The onset of this tumour is very insidious and is an affection of the fifth and sixth decades. Its presence is at times indicated by a niggling pain for which a supposedly peccant tooth is extracted. The socket does not heal but is quickly occupied by friable soft growth indicating that already the cavity of the antrum has been invaded to its utmost capacity. Careful observation in such a case will usually show a slight puffy swelling immediately below the corresponding infra-orbital margin, and the history of a blood-stained nasal discharge on the same side will be elicited. The disease, however, may occur when all the teeth on the side affected are absent. The quite symptomless way in which the antral cavity is invaded by this type of squamous carcinoma has caused it to be known as the epitheleoma térébrant or boring epithelioma.

Maintenance of Function.

I do not propose to discuss the operative technique demanded for the removal of these tumours of the mandible and maxilla, but I wish to draw your attention to the steps necessary to minimise deformity and maintain function. In the case of the mandible, removal of half the bone will permit muscular action to pull the sound half in a direction downwards, inwards, and backwards. If such a position be allowed to ensue any hope of good functional result may be dismissed as impossible. It, therefore, behoves the surgeon to adopt measures to prevent such happening, and to this end it is his bounden duty to call to his aid a trained dental surgeon familiar with the methods of controlling distortion.

The secret of success is the immediate splinting of the mobile half mandible on the fixed maxilla in such a way that their relative positions are correctly maintained. The splint destined to be used should be planned and constructed before the operation is undertaken and should be inserted before the patient leaves the operating table. The splints used for these cases of excision of mandible and maxilla may appear to be bulky, but I have never known any untoward results or inconvenience caused by their presence. In fact, the patients express themselves more comfortable with them than without them. The splints are worn for a period of six weeks to two months, by which time the tissues are so conditioned as to permit of the insertion of a permanent apparatus which will allow the exercise of the masticatory function.

As a result of one's experience in these lesions of civil life it was possible to preach the gospel of active coöperation between surgeon and dental surgeon in the lesions of war, and although these pleadings fell for a time on barren ground they were eventually universally accepted, and laid the foundation of the extraordinarily good results obtained in the treatment of war injuries to the face and jaws. As in military surgery, so in civil surgery it must be emphasised that no surgeon who undertakes the treatment of these jaw and facial lesions can afford to act alone; he must enlist the services of a skilled dentist. The cosmetic and functional results obtained in the cases shown to you to-day will, I think, convince you that such coöperation is not merely theoretically sound but practically justified.

SENECIO DISEASE,

OR CIRRHOSIS OF THE LIVER DUE TO SENECIO POISONING.

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WE have called the condition about to be described "senecio disease" for want of a more appropriate name, and also thereby to indicate the cause. In 1918 the attention of the Union Government Health Department was called by Dr. L. Albertijn to certain cases of sickness of obscure causation occurring in the George district of the Cape Province. Whole families had suffered from time to time from a complaint, of which the chief symptoms were abdominal pain and vomiting with ascites. It was suggested that the disease was of dietetic origin, and samples of meal and wheat, bread from which was known to have been eaten for some time by affected persons, were examined. Investigations showed that the plants known as *Senecio ilicifolius* and *Senecio burchelli* grow as weeds in the wheat-fields at George, and that when the wheat is threshed seeds and portions of these plants frequently remain behind and are sold with the wheat. Should the wheat be milled in mills of old-fashioned type, where winnowing is not efficient, the seeds are also ground with the wheat grains into meal.

When making these investigations we were aware that plants of the same species are known to produce similar diseases in stock—e.g., straining sickness, stomach staggers or Moltedo disease in South Africa, Winton's disease in New Zealand, and Picton disease in Nova Scotia. Experimental animals fed on portions or seeds of these plants have developed symptoms and shown post-mortem appearances similar to those which we are about to describe in man.

Symptoms.

The disease had existed in the George and Mossel Bay districts for at least ten years previous to our inquiries, and during this period some 80 cases—many of them fatal—had occurred. At the time of our inquiry there were about 11 cases; the majority of these patients subsequently died. We found that the patients invariably belonged to the poorer class of Europeans, whose staple food was bread, and who seldom had any other food except perhaps sweet-potato. The commencing symptoms are generally those of digestive derangement, resembling those of ordinary dyspepsia, with pain in the stomach, sometimes worse after meals. The onset may be either gradual or rapid. It is difficult to obtain an accurate history from persons of the poor white class, but our information goes to show that the period between onset and death may be from 14 days to two years or more. We also learnt of a man who, after eating for two or three days bread containing senecio, was seized with violent attacks of abdominal pain which passed off without treatment. The first noticeable symptom is nausea, generally followed by vomiting, and attacks of acute pain in the stomach; these symptoms continue at intervals, becoming more frequent and severe as the disease progresses. Diarrhœa may or may not be present; blood is often vomited or may be passed in the stools; the liver soon becomes enlarged, and ascites rapidly develops in all severe cases; in no fatal case investigated was dropsy absent. The temperature is generally normal or subnormal; signs of collapse often come on quite early in the disease. Distension of abdomen is considerable and frequent "tapping" has been resorted to by medical men in attendance.

Examples of Cases Seen.

CASE 1.—W. B. L., European male, aged 11, seen on April 24th. Temperature normal; tongue coated; pulse rapid; patient stupid and incoherent owing to being under influence of morphia to relieve attacks of acute abdominal pain. First complained of feeling ill on

April 1st; complained then of intense abdominal pain; was put to bed on 2nd; abdominal pain followed by vomiting after each meal; blood noticed in vomit about 5th; abdomen became enlarged and when seen by doctor on 8th was filled with fluid; patient was tapped about 15th. On 24th patient very collapsed; abdomen filled with fluid; liver enlarged; patient extremely emaciated; was being fed on fluids, but attacks of vomiting frequent; had some diarrhœa with blood in stools, but had been kept under influence of morphia during past five or six days, since which time diarrhœa absent; patient obviously in intense pain; first heart sound extremely feeble; patient appears to be dying. Died on 26th.

An elder brother died with similar symptoms three weeks previously. Two other brothers are suffering from same disease and are in bed in adjoining room.

CASE 2.—C. E. L., brother of above, aged 16. Symptoms almost identical with those described in Case 1. Illness commenced about April 3rd. Patient is in bed; has an expression of fear; tongue coated; temperature normal; tosses about every few minutes, writhing with pain; keeps hand over stomach; vomits most of food given him; specks of blood noticed in vomit on several occasions; breath extremely foul-smelling; liver difficult to make out; abdomen distended with ascitic fluid; has been tapped twice; no diarrhœa; urine contains albumin; pulse running and feeble. Died May 9th.

CASE 3.—A. L., aged 12, became ill same week as previous cases; has had similar symptoms but not so acutely ill; ascites present; enlarged liver can easily be made out.

CASE 4.—M. M., fairly well-nourished European girl. Has had slight attacks of vomiting accompanied by pain in the gastric region for past few weeks; liver enlarged and ascites present. Appeared to be mild case of senecio disease and was sent to the New Somerset Hospital for observation under care of Dr. Hugh Smith. By kind permission of the superintendent (Dr. A. C. Seale) I am able to give the following extracts taken from the hospital notes: "Admitted April 12th. Diagnosis: cirrhosis of the liver. Address George. Age 14. *History:* 23 days ago patient noticed that abdomen was swollen. Later there was pain around umbilicus. Swelling and pain increased. Vomiting with diarrhœa at first. *Condition on admission:* Abdomen large and filled with ascitic fluid. Tongue covered with furry white patches. Herpes on mouth. Urine contained no albumin. Temperature subnormal. Abdomen tapped April 23rd, when 3½ of fluid were drawn off. Patient while in hospital had very little pain. Abdomen tapped again April 29th. Apart from tapping the only other treatment was dietetic and the patient was given a mixture containing strophanthus, squills, and buchu. The abdomen gradually became less in size, and patient continued to improve so much that she was allowed to go to a convalescent home for a few days prior to returning home. At this time she had a violent attack of abdominal pain and vomiting, the vomit containing specks of blood. Her condition subsequently continued to improve, and she was allowed to return to George on June 18th."

CASE 5.—J. D., European male, aged 19. Three years back brother died with symptoms of senecio disease. J. D. has had disease two years. Commenced in usual manner—ascites accompanied by gastric pain and vomiting. Abdominal pain and vomiting now considerably less. Patient extremely emaciated; abdomen has been frequently tapped.

Incidence, Prognosis, and Treatment.

Most of the cases investigated were in Europeans, and the majority in children. Prognosis is generally bad, but is dependent on many circumstances. The disease is essentially a case for prevention rather than cure, and the Government has taken action on these lines. Once the disease shows itself, treatment of symptoms as they present themselves is all that we can suggest.

Post-mortem Appearances of Organs.

The liver, in what seemed to be a recent fatal case of this disease in the George district, was increased in size, edges rounded, and on the surface well-defined, slightly raised areas of a deeper colour than normal were noted. On cutting into these portions they were found to be engorged with blood and to vary in size from that of a hazel nut to a walnut. Microscopic examination of sections showed the capillaries between the hepatic cells to be distended with blood, the central venule dilated, and the liver cells reduced in size, some containing pigment of a brown colour and others fatty particles. The more advanced cases showed similar sized areas, but were of a lighter colour than the liver substance, and on microscopic examination the usual round-celled infiltration and formation of new fibrous tissue—met with in cirrhosis of the liver from other causes—was the most marked change.

The stomach was, as a rule, normal in size. In two fatal cases of the disease reported by local medical practitioners the contents were stated to have been "dark-brown coffee ground material." In the specimens examined in the Government laboratory numerous minute, dark-coloured, circular spots were noticed on the inner surface, varying in size from that of a pin's head to that of a pea. The area of the stomach affected was always the larger curvature, beginning 1½ inches from the pylorus and extending along the lower part of the larger curvature for 3 inches. On washing under the tap these dark-coloured spots appeared as tiny ulcers, some very superficial, but the majority extending through the mucous coat; the bases appeared covered with hæmorrhage from small eroded vessels. With the exception of marked congestion of the kidneys the other organs examined were normal.

Dr. F. T. Waldron, of Mossel Bay, held a post mortem upon a girl, aged 13 years, who had been ill from this disease for five weeks, and reported:—

"Stomach much dilated. Contents: altered blood, many small ulcers towards pyloric end. Liver not increased in size; light-coloured areas showing cirrhotic change."

Animal Experiments.

A number of feeding experiments were conducted upon guinea-pigs and white rats with meal suspected of being infected with senecio heads, and also with dried flower-heads and seeds of both *Senecio ilicifolius* and *Senecio burchelli* added to their ordinary food.

All the experimental animals became very emaciated in spite of the fact that they consumed a normal amount of food. One guinea-pig out of 12 under experiment died after feeding for ten weeks on various quantities of dried ground-up seed-heads and tops of plant identified as *Senecio ilicifolius*. The post-mortem findings in this guinea-pig were almost identical to those in the human subject referred to above—viz., liver mottled, showing to naked eye well-marked areas of a lighter colour than normal, which on microscopic examination were found to be due to round-celled infiltration—both intra- and inter-lobular—with the formation of new fibrous tissue. The stomach and upper part of duodenum contained dark-brown fluid (altered blood), and many small specks of blood were found adherent to the stomach wall, chiefly in the neighbourhood of the pyloric end; on washing the blood away numerous minute ulcers could be made out with a hand lens.

Practically identical appearances were found upon post mortem of three white rats, which died after having been fed daily for nearly four months on 3 g. of ground-up heads of *Senecio ilicifolius*, and in one rat which for three weeks had had 3 g. daily of *Senecio burchelli*. In the three rats fed on *Senecio ilicifolius* the livers were contracted and distinctly granular on the surface; in the rat fed on *Senecio burchelli* the liver was congested, but showed no evidence of contraction. The stomach and small intestine of all the rats contained dark-brown, blood-stained material. Fresh blood flakes were noticed on the stomach walls in the pyloric region, and after washing this away very minute pin-point ulcers could be made out.

We recognise the incompleteness of our investigations, which were unfortunately interrupted by the epidemic of influenza which swept South Africa in 1918. Further inquiry and research are necessary, but it seems desirable to place our preliminary investigations on record.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THE FAMILY HISTORY IN A CASE OF ANGEIO-NEUROTIC ŒDEMA.

BY C. CAMERON, M.A., M.B. GLAS., D.P.H.,
MEDICAL SUPERINTENDENT, CITY OF GLASGOW SANATORIUM, OCHIL HILLS, KINROSS-SHIRE.

Angeio-neurotic œdema is encountered with sufficient frequency to preclude its consideration as a rarity, but the very definite hereditary element in this case justifies its annotation. Other elements in the case and in the collateral family cases support suggestions with have been made regarding the ætiology of the condition.

Miss M., aged 21, was seen by me on the evening of August 20th. She stated that for the previous three days she had suffered from a persistent headache and a sensation of constriction of the upper part of the abdomen. On the afternoon of this day sudden swelling had appeared on the right side of the face, and had spread rapidly. By evening she had intense swelling of the whole of the right side of the face. The skin was tense, white, and shiny, the eye was completely closed, and opening of the œdematous lids showed œdema of the palpebral but not of the ocular conjunctiva. The swelling did not spread above the level of the supra-orbital ridge, and its lower margin faded into the submaxillary area. The interior of the mouth was not affected. There was no pain or tenderness, and no abnormal sensations or sensibility in the affected area. She was given a saline aperient, and put on 15 grains of calcium chloride four-hourly. By the following morning the condition was subsiding, and by that evening the face was approaching its normal appearance, though slight œdema persisted until 48 hours or more after the onset.

She informed me that from her earliest years she had been liable to "bilious attacks," characterised by headache, and sensations of

swelling of the abdomen, culminating, as a rule, in a bout of vomiting, the whole condition being associated with a sensation of intense prostration. These attacks first appeared when she was 6 years of age, and when she approached the age of 15 years swellings of various parts of the body began to become associated with them. As stated, the "bilious attacks" usually culminate in vomiting; but if this method of termination does not accrue, swellings of one hand or of one foot supervene, the appearance of the swelling coinciding with a sensation of relief from the general symptoms. These swellings occur about twice in the year. When the hand is affected the dorsum is affected primarily, the swelling spreading to the fingers, which swell like sausages. When the foot is affected the plantar surface is involved first, the swelling quickly involving the toes. The condition usually subsides within 24 hours. On one occasion a violent bout of vomiting ensued, which dispersed the swelling immediately. The "bilious attacks" appear to be premenstrual in their periodicity.

Family History.

She volunteered to me a very exact family history, which is here briefly summarised. The condition is familial, and is traceable to her father's mother. She has no definite proof of any antecedent family involvement. In all the members quoted the outstanding signs have been those of "bilious attacks," the symptoms of which correspond with her own subjective symptoms. These invariably appeared in childhood, and at a later period, usually coincident with the age of probable puberty, œdema signs manifested themselves.

(1) *Grandmother* died at the age of 72 of "old age." She was liable to frequently recurring "bilious attacks" during the course of her whole life, and frequent attacks of localised swelling in various parts of the body.

(2) *Father* (son of this grandmother) is still alive at the age of 59 years. He suffers from frequent "bilious attacks" and has attacks of œdema, which recur roughly at fortnightly intervals over long periods, and manifest themselves on a hand or foot or on the face. On one occasion he had a severe attack of swelling of the throat (? larynx) and was in great respiratory distress for 24 hours.

(3) *Uncle* (brother of father) suffered from "bilious attacks" and attacks of œdema, and died at the age of 21 years from an acute attack of œdema of the throat (? larynx), death supervening after two days' illness.

(4) *Aunt* (who was a step-sister of the father through his mother's second marriage) suffered from "bilious attacks" and attacks of swelling, which became more frequent as she grew older. She died at the age of 44 from an acute throat attack.

(5) *Cousin* (son of aunt quoted) suffered from attacks which were similar to those of his mother. He died suddenly at the age of 21 years from an acute throat attack.

(6) *Brother*, aged 30, has suffered from "bilious attacks" since infancy and attacks of swelling of various parts of the body since the age of probable puberty.

Her remaining direct relatives comprise one full brother, one full sister, and three step-brothers, children of her father's second marriage. Her brother and sister have shown no signs of the condition, and one brother, who was killed during the war, and one sister, who died of influenza two years ago, were likewise free from symptoms. Of the three step-brothers, one, who is 5 years of age, shows signs of a tendency to the same type of "bilious attack," but hitherto has shown no evidence of swelling of any part of the body.

In all these cases the frequent "bilious attacks" constitute the main group of symptoms. If these are not relieved by vomiting swellings appear, and often afford relief to the bilious headache and prostration. Occasionally vomiting follows the appearance of the swelling, and both conditions subside very rapidly.

The present patient (M. W. M.) states that in the case of her father, if swelling of any part of the body accompanies a bilious attack a longer interval of freedom from bilious attacks ensues, and if the swelling does not appear the bilious attacks are more frequent and severe. In her own case, she states that if the bilious attack does not end quickly by vomiting the swelling is liable to appear, and she thinks that the vomiting is a safeguard against the œdema.

Remarks.

The family history is most striking, and, as so many fatalities have resulted from the disease, the present patient has a very acute interest in her condition and can vouch for the accuracy of the information which she has given. The hereditary transmission dates at least from the grandmother on the father's side, and the history shows that both males and females participate in the transmission and are equally affected by the condition. The outstanding point in the symptomatology is the association of gastric symptoms with the œdema. In all members of the family affected these two sets of symptoms were combined, and no member had one group of symptoms without the other. The "bilious" symptoms manifested themselves at an early period of life, and the œdema signs usually appeared at an age which suggests the probable onset of puberty. The œdema never appears without accompanying gastric symptoms, but the gastric symptoms may appear without the œdema. The onset of œdema seems to cut short a bilious attack, and in one member of the family seems to guarantee a longer period of immunity from such attacks. In the present patient the periodicity of the attacks suggests a menstrual relationship, but she is positive that in other female members of the family the attacks have been too frequent to have any such relationship. The present patient appears otherwise healthy, and shows no evidence of other disease.

Quincke's theory, which assumes an intoxication from the intestinal contents, does not cover the hereditary facts of the condition. It is an open question whether the condition is of gastro-intestinal origin or whether the gastro-intestinal symptoms, as has been suggested, are the result of a similar œdema of the intestinal mucosa. The association between the two groups of symptoms is, however, undoubted, and they are apparently part of the one condition. The suggestion is that both are probably reflex phenomena resulting from some other cause.

"ACIDOSIS" FOLLOWING BEE-STINGS.

BY J. O. BEVEN, M.A., M.R.C.S. ENG.

I HAD recently to attend on a brother medical man and two ladies who were attacked by the rock bee, *Apis dorsata*, when climbing the rock fortress of Sigiri, in the North Central Province of Ceylon, and my notes may be of use to anyone called upon to deal with a similar emergency.

The party was attacked by large swarms of bees on the summit of the rock at 7 A.M. and had to make the notoriously dangerous descent attended by their tormentors. They motored to the rest house close by, where some of the stings were removed and where they got some whisky, which was used both externally and internally. They then motored to Habarane, 15 miles away, where I was shooting, and found them at the rest house at 9 A.M. The pain had been very intense at first, but was then easier, and there was less swelling than one would expect.

Dr. S., stung in upwards of 120 places, mostly about the head, neck, and shoulders, I found in a collapsed condition. There was incessant vomiting of greenish-yellow fluid, associated with severe abdominal cramp and profuse watery diarrhœa. The stools resembled rice water, and contained practically no fæcal matter. There was air hunger and the pulse was very rapid and weak, and sweat was literally pouring off the patient. I got a large supply of sodium bicarbonate at the local dispensary, and since there was no means at hand for injecting it, kept on giving half-ounce doses every ten minutes, together with brandy. These were at first returned within three or four minutes of being swallowed, but after about 45 minutes the vomiting became less frequent, and the pulse and respiration improved. At this stage Miss B., who till then had merely felt rather sick, collapsed, and, fortunately, Mrs. S. was in a fit state to attend to her husband, having suffered least of the three.

Miss B. had been stung in over 80 places, and the poison seemed to have a delayed action, which was very acute when it came. Within a few minutes she was cold, clammy, and almost pulseless, the respirations were slow and gasping, and I greatly feared that the almost continuous vomiting must induce heart failure. I packed her with hot bottles and all the rugs I could lay hands on, and gave the bicarbonate and brandy as often as the vomiting would allow. There was no diarrhœa in this case, and only slight cramp, but the breathing grew worse and drowsiness was succeeded by periods of coma. I had almost begun to despair, when at the end of an hour the vomiting grew less frequent and the pulse and respiration better. When two doses of the mixture had been retained the patient fell into a natural sleep. Recovery in both these cases was astonishingly rapid, and within a few hours there was little to show for the trying time they had been through. The next day several of the stings had an area of ecchymosis the size of a florin round them, but there was no swelling.

A week later Mrs. S., who had originally escaped lightly, developed a general erythema, with patches of urticaria, and the most intense pruritus. Dr. S. followed suit, and nothing seemed to afford much relief in either case. The rashes disappeared in about five days, and were then succeeded by very indolent, scattered furuncles, which lasted for some weeks. The furuncles appeared on areas which had been particularly badly stung and were peculiar in that they contained much serum and hardly any pus.

I have not been able to get any information as to the nature of the venom of the rock bee. In the present case, making allowances for difference in weight and sex of the victims, the severity of the illness was in proportion to the amount of venom injected. How far the subsequent trouble was due to the bee-stings is a matter for conjecture. One of the original victims had no further symptoms, and this one had been most severely ill at the time. The other two developed exactly similar symptoms within 48 hours of each other, and without any ascertainable cause. They had neither of them been similarly afflicted before. Assuming that the stings caused the rashes and furunculosis, it is difficult to explain how a poison, acting rapidly and rapidly excreted, should be able to give rise to symptoms after the lapse of a week.

Cairo, Egypt.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS.

Presidential Address.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 5th, Mr. E. LAMING EVANS, the President, being in the chair.

The PRESIDENT delivered his opening address on Functional Results of Successfully Reduced Congenital Dislocation of the Hip. Reviewing the methods of treatment prior to the manipulative period, he said we found that continuous extensions with or without abduction never led to a successful reduction. If in the course of treatment the head lay over the acetabulum it was kept off the acetabular floor by infolded capsule, and progressive displacement occurred when extension ceased. He then described and showed a series of skiagrams illustrating the functional results of a case so treated. It was difficult, he continued, to standardise hip-joints as functional organs. Range and power of mobility were useful tests but offered unreliable data for estimating the functional results exhibited in walking and standing. He had had, during the last ten years, an opportunity of examining 79 cases of adults suffering from congenital dislocation of the hip in which no operative treatment had been undertaken. In every case the degree of direction of mobility, the power of mobility, and the degree of displacement were noted. In general terms it might be said that the degree of displacement caused a shortening rarely in excess of 2½ inches; that functional disability increased rapidly between the ages of 20 and 30; that after 30 a walk of over one mile was seldom undertaken voluntarily; and that the direction of displacement influenced functional disability after 30 only slightly. In some cases the functional disability was out of all proportion to the physical signs and the patient was practically house-ridden. With regard to the Hoffa-Lorenz method of treatment by open exposure and by shaping the femoral head and acetabulum before reduction, he was inclined to think that the results should be included under the category of nearthroses rather than successful reductions. However we regarded them the results must be considered poor; many had been disastrous, adding marked deformity and increasing functional disability. X ray examination of cases treated by surgeons of undoubted operative skill and ability had, in all cases, failed to disclose a permanent reduction. In this category he did not include the open operation of arthrotomy performed with a view to dilating a constricted isthmus and so facilitating reduction by manipulation. Turning to cases treated by manipulation, he said that Paci, Lorenz, and others were employing this method during the last few years of the last century. In England cases commenced to be treated by manipulative methods in 1903. He himself had no successful reductions dating from that year, partly because the method employed involved much more force and tearing of healthy parts than was subsequently found to be necessary, and partly because of the difficulty of obtaining satisfactory X ray records. In his earlier cases in 1903 reductions were undoubtedly obtained, but inefficient after-treatment and the method of reduction combined to cause the reduction to be unsuccessful by reason of the failure of retention of the reduced head. In all 81 cases had been dealt with, but owing to the difficulty of keeping in touch with hospital patients, which had been increased by the war and the increased railway fares, he was unable to show at this time any cases reduced prior to 1910. Four main principles of treatment resulted from observations made upon these cases: (1) reduce early; (2) reduce gently; (3) retain concentrically; and (4) encourage early function. A number of skiagrams and illustrative cases were shown.

Mr. H. A. T. FAIRBANK said that functional failure depended upon arthritis arising in the hip-joint itself and to injury to the surrounding parts, especially to the adductor muscles. In absorption arthritis absorption of the head and neck and of the acetabulum occurred and was followed by redislocation. Arthritis so frequently followed open operation as to suggest that it was caused by infection.

Mr. T. H. OPENSHAW drew attention to the fact that cases of congenital dislocation of hips were now met with at a much earlier age than formerly. He had operated upon cases of congenital dislocation of the hip by Lorenz's method since 1896. In 1898 he had shown cases of cure. After the South African War he published a paper in which he pointed out that Lorenz's method did not cure every case of congenital dislocation of the hip, owing to anteversion of the neck or imperfect reduction or subsequent contraction of the adductors or other cause. He agreed with the President's statement concerning osteo-arthritis. If the cases were met with between 3 and 4 years of age he considered that 18 out of 20 ought to be perfect cures, and that the subsequent onset of osteo-arthritis need not necessarily be expected.

Mr. A. S. BLUNDELL BANKART thought that the fear of redislocation after reduction had been exaggerated, and that the attitude of hyperextension had been overdone, with the result that in a very large proportion the head of the femur was in front of, and not truly in apposition to, the acetabulum. He believed that more accurate apposition was obtained when the femur was rotated inwards, especially when there was anteversion of the neck, and he had for some years adopted an attitude of 45° internal rotation and abduction as a routine second position. It was necessary to include the knee, bent to a right angle, in the plaster. He disagreed with the practice of encouraging or allowing these children to walk or crawl in plaster soon after reduction. The development of the hip-joint was favoured by constant pressure of the head of the femur against the centre of the acetabulum. The source of this pressure was muscular contraction and not movement. Movement only served to dissipate the pressure from the centre of the acetabulum. He did not allow the patients to walk until there was X ray and other evidence of stability at the hip-joint. He also deprecated the routine division of the adductors and preliminary stretching or rupture of muscles before reduction. He had seen several cases in which, although the hip had been reduced, the gait was greatly impaired by permanent injury to the muscles. He, personally, did not manipulate the limb in any way before reduction, and only occasionally was it necessary to divide the tendon of the adductor longus in older patients. He believed that treatment on these lines gave far better results than did strict adherence to the original technique of Lorenz.

Exhibition of Clinical Cases.

Mr. PAUL BERNARD ROTH showed a case of a patient, aged 20, who was "rickety from birth." He was operated upon at the age of 10 years, at which time it was noted that he was very small for his age. Five years ago, when he was 15, his legs became weaker and for two years he was unable to walk. He then began to get about again, but broke, in quick succession, his left forearm, right thigh, both thighs just above the knee, and his left collar-bone. He now had severely distorted femora and was only 4 feet high. His head bulged markedly in the temporal region over the ears. Mr. Roth had had him fitted with Thomas's calliper knee-splints, moulded to the curves of his thighs, thereby enabling him to stand, and it was hoped that in a short time he would be able to walk.

Mr. B. WHITCHURCH HOWELL showed a girl, aged 4 years, who had walked at a year and a half. Only three months ago was the limp noticed. The right leg was half an inch shorter than the left. X ray examination showed adduction and splayed-out acetabulum on the right side, with no upper margin. The case was shown on account of (1) the late appearance of the limp; (2) the X ray appearances which indicated a poor prognosis; and (3) for opinion as to the best method of treatment.

The PRESIDENT and Mr. OPENSHAW advised manipulation and plaster. Mr. FAIRBANK advised open operation

to form an upper lip to the acetabulum, without opening the joint on account of the unfavourable X ray appearances.

Osteitis Deformans.

Mr. FAIRBANK showed a case of Osteitis Deformans in a woman aged 58 years.

Since November, 1919, she had been complaining of pain in the left leg below the knee. This had been getting worse, and was more severe after standing, after walking, and in bed at night. Occasional pain in the right hip and left foot; no evidence of syphilis; the Wassermann reaction was negative. She had not suffered from headache. All teeth had been removed. Examination showed definite pain and tenderness in calves and in soles of both feet, especially the left. Both arches of left foot were giving way; knee-jerks present; left tibia thickened in upper half or more, and curved anteriorly; anterior edge rounded. Other tibia normal; femora perhaps a little thickened in the lower third; spine normal. Nothing else abnormal found; no obvious source of infection. X rays showed diffuse thickening of upper two-thirds of left tibia, with increase of anterior curve. A number of clear spaces, mostly small, in anterior portion of the bone, and one larger space, more than half an inch in diameter, in centre of upper third of bone shut off from the medullary cavity, upper limit of the space being 2 inches below the articular surface. Shaft of other tibia a little thickened, but there was no honeycombing. Right fibula showed some thickening, but not left. Shafts of femora appeared unduly thick and dense for a woman; medullary cavities ill-defined. Cranium uniformly and definitely thicker than normal. The diagnosis seemed clear. With regard to treatment, she had been put on a diet almost wholly protein, the carbohydrates being reduced to a minimum. As a result she said she felt better, but as the alteration in diet had commenced only two or three weeks ago it would be unwise to draw conclusions.

Deformities Associated with Chronic Nephritis.

Mr. FAIRBANK also showed a case of Deformities Associated with Chronic Nephritis in a girl, aged 13 years, in whom there had been bowing of the legs for a year.

No history of rickets in childhood; no family history of rickets or of deformities. Her general health appeared to be good. Two years ago she became nervous and complained of pains in the loins, for which blisters had been applied to the back on the supposition that she was suffering from chill. No history of traumatism to the legs. Patient was 4 ft. 9 in. in height (only ¾ in. below the average). Genu varum present, affecting both legs, the curve being principally in the tibiæ, just below the upper extremities. Lower epiphyses of both tibiæ and fibulæ were somewhat enlarged; right leg ⅛ in. shorter than left, the shortening involving all portions of the leg. Nothing else abnormal found in lower limbs, except flexion slightly limited in right hip, and right thigh could not be carried across the abdomen. Both forearms shorter than normal. Both ulnæ and radii curved, radii outwards, ulnæ backwards, and distal portions were slightly enlarged. Limitation of pronation and supination, particularly the latter, on both sides. Movements at wrist-joints limited in direction of flexion and abduction. No beading of the ribs; spine normal. Examination of body for sepsis was negative; tonsils small; sepsis, if present at all, of the very mildest type. Only one gland could be felt in the neck; spleen not palpable; a catheter specimen of urine showed a trace of albumin and a few granular casts. No globulin present. Culture proved sterile. X ray examination showed some distortion of the upper epiphysis of the tibia and a fairly abrupt curve in the juxta-epiphyseal region of the shaft, accounting for the varum. On each side there was a crack running into the shaft on the outer side for about ¾ in. These cracks were nearly parallel to the adjacent portion of the epiphyseal line and distant from it ⅛ in. in one leg and ¾ in. in the other. The hips showed no abnormality, and there was no sign of rickets. The radius in both forearms showed a fairly abrupt curve, convex outwards, at the junction of the middle and lower thirds, with some diffuse thickening. The ulna had a more gradual curve, convex backwards, the lower end being displaced somewhat forwards, in front of and overlapping the carpus. The epiphyseal lines were sharp and narrow, but a little irregular. The radial epiphysis was markedly wedge-shaped with the base outwards, the carpus being, as it were, pushed over towards the ulna so that the two overlapped, the ulna in front and the carpus behind. There was no definite obliteration of the inner part of the radial epiphyseal line, and the radius was not short, so that the appearances did not quite agree with that seen in Madelung's deformity, while the position of the ulna was different. The hips and the pelvis showed no deformity or abnormality. A considerable number of cases of renal disease associated with infantilism, and with infantilism plus deformities, were to be found in the medical literature, particularly in recent years. The case was exceptional in that the child was of normal stature. Our knowledge of the rarer types of bone disease was so imperfect that no opportunity should be lost in investigating thoroughly every case not obviously due to rickets. All those cases which invited the name of continued or delayed rickets should be investigated by means of X rays, complete examination of the urine, blood, &c.

Mr. FAIRBANK also showed a case of Pseudo-Coxalgie in a boy aged 8 years, who was knocked down by a bicycle four months ago and bruised his left foot.

SECTION ON PATHOLOGY.

A MEETING of this Section of the Royal Society of Medicine was held on Oct. 19th, Professor W. S. LAZARUS-BARLOW, the President, being in the chair.

The PRESIDENT delivered an address upon

Some Pathological Effects of Exposure to the Gamma Rays of Five Grammes of Radium Bromide.

He said that the large quantity of radium in question had been entrusted to himself, Professor Russ, and the late Mr. Cecil Lyster for experimental purposes at the Middlesex Hospital. The entire report would be presented, when completed, to the Medical Research Council, by whom the loan was made, and by whose courtesy the present interim communication was possible. For the results now brought before the section he alone was responsible. They were derived, in the main, from the histological examination of 20 frogs, 28 rats, 15 rabbits, and 9 cats.

In respect of the lethal effects of gamma rays it appeared that primary and secondary changes in the animal must be distinguished. A rat would die if exposed continuously to the 5 g. in about 48 hours, but he would also die about 42 hours after an exposure of six hours. Making allowances for distance from the source of irradiation, the minimal lethal dose of gamma radiation from this quantity of radium was about 6 hours for the rat, 9–10 hours for the rabbit, 5 hours for the cat, and about 96 hours for the frog.

Marked changes were seen in the blood, notably a diminution in numbers of lymphocytes. This was to be correlated with the presence of much nuclear debris in lymphatic glands and spleen when the animal was killed immediately after exposure, and with a marked cellular deficiency in the same organs in animals that had survived some days. This disappearance of cells was associated with a measurable diminution in size of the spleen. Hence it was now necessary to add irradiation to pressure and to disuse as a cause of atrophy. Erythrocytes also diminished in numbers and hæmorrhages occurred in gastric and intestinal mucosa and in bone marrow. To a large degree the blood changes in animals were reflected in man.

In striated muscle a deposition of lipoid and loss of striation were sometimes noted and a translucency of fibres was frequent. In unstriated muscle a vacuolation was not uncommon, which generally affected the contractile material, but also involved the nuclei. Cardiac muscle usually showed no change unless the exposure were very severe, but under this condition translucency of fibres, loss of striation, and great fragmentation might be found. In the liver nuclear and cytoplastic changes were often present. The nuclei might be ghost-like or represented by no more than a few granules of chromatin, and the cytoplasm might disappear almost entirely. The two conditions were apparently independent; and it was frequent in the liver of animals or in new growths of man, after exposure to this high degree of gamma irradiation, to find the cells represented by a well-marked cell membrane and a well-marked nucleus, with a considerable space between the two.

In the kidney the cells of the convoluted tubules were chiefly affected. In the cat—but in none of the other animals examined—the renal cells in this region were almost completely converted into lipoid, but the glomeruli and the cells of the conducting tubules showed no trace of lipoid. In the frog the glomerulus seemed to be changed to the greatest extent.

Over the gastro-intestinal tract there was widespread disintegration of the mucosa associated with pronounced formation of mucus. The disintegration concerned the duodenum, jejunum, and upper part of ileum in particular, and the increased formation of mucus concerned the colon and rectum and, to some degree, also the stomach.

Our knowledge of the effects of X rays upon the generative system would lead to the supposition that testicle and ovary would be profoundly affected by the large degree of irradiation in question. In point of fact this was not the case. There was an arrest of spermatogenesis and some impaired staining of spermatozoal heads in the male and, in the female, the primordial ovules and Graafian follicles appeared to be the seat of a change resembling coagulation necrosis. But these effects were not associated with pronounced histological features. Probably the explanation lay in the relatively short survival of animals that had undergone a prolonged exposure to the 5 g. of radium bromide.

The address was illustrated by macroscopic and microscopic specimens and by lantern slides.

HUNTERIAN SOCIETY.

The Ministry of Health and Preventive Medicine: The Hunterian Lectures by Sir George Newman.

AT the inaugural meeting of the session of this society on Oct. 13th, at Sion College, under the presidency of Dr. A. C. JORDAN, Sir GEORGE NEWMAN delivered the first Hunterian lecture, taking as his subject "The Ministry of Health as an Instrument in Preventive Medicine."

The lecturer said Hunter left three legacies to the profession, which formed a kind of basis for the new conception of preventive medicine. For Hunter was a student of the evolution of function; he insisted on the importance of comparative pathology, and he taught that the foundation of healing rested with the recuperative and defensive powers of the body. The functions with which the Ministry was charged in promoting the health of the people were the following: (1) the prevention and cure of disease; (2) the avoidance of fraudulent remedies; (3) treatment of physical and mental defects; (4) the treatment and care of the blind; (5) the initiation and direction of medical research; (6) the collection and publication of information and statistics in regard to public medicine; (7) the training of persons for the public health service.

Having referred to the responsibilities in regard to education which have now been assumed by the University Grants Committee, the lecturer went on to explain that the medical work of the Ministry was divided into the following six main sections: general health and epidemiology, with a laboratory for research; maternity and child welfare, staffed by medical women, nurses, and midwives; tubercle and venereal diseases; the control of food-supply; general medical practice; sanitary administration. In addition it embraced the school medical service, the Registrar-General's Department, and the Board of Control for Lunacy. Also, for the first time medical referees had been appointed who would be located in different parts of the kingdom. Information on medical and health matters was regularly sought and collected, being afterwards studied and charted, and not alone from the United Kingdom, but from all the various parts of the world. It should be clearly understood that the Ministry was not established to solve the problems of local self-government, but those which arose in the medical work of the central departments of State. The Ministry could work only through the local authorities, and for the plans to be a success the will and impulse of the people were essential. Efforts were being made to render the sanitary cordon round these islands complete, special attention being given to food and aliens; to establish an International Health Office attached to the League of Nations; to revise the preventive methods in relation to tuberculosis and maternity; to deal with incipient mental disease; and to improve the conditions of insurance medical practice.—Sir George Newman was cordially thanked for his address.

ROYAL GLASGOW MEDICO-CHIRURGICAL SOCIETY.

THE first meeting of this session was held in the Faculty Hall on Oct. 15th, when Professor W. K. HUNTER delivered the Presidential address, the subject being

The Basal Ganglia: Their Functions and Diseases.

Professor Hunter first discussed the anatomical relations of the ganglia and quoted the most recent observations, following out in detail the tracts and fibres passing to and from the ganglia, illustrating the points by diagrams and photographs. Their microscopical appearance and the grouping of the cells composing them were also referred to. In dealing with the functions of the basal ganglia it was pointed out that these structures were phylogenetically as well as embryologically much older than the cerebral cortex, and reference was made to the evolution of the ganglia and tracts. In the lower vertebrates the basal ganglia appear to represent the higher centres of the brain, where the optic thalamus constitutes the receptive centre for afferent and the corpus striatum the centre for the direction and regulation of efferent impulses. Ascending the animal scale the basal ganglia become subordinated to higher centres, although the optic thalamus still receives sensory impulses, and the corpus striatum would seem to regulate to a certain extent automatic and associated movements. In considering the relationship of these lower and higher centres the case of the optic thalamus and the cerebral cortex was first taken up. Is the destination of our various sensory impulses the thalamus or the cortex? The study of cases of what is called Déjerine's syndrome gives an answer. Here there is a lesion in the thalamus which interrupts the sensory fibres passing from the thalamus to the sensory area in the region of the post-central gyrus, and also the efferent fibres coming from the cortical area back to the thalamus. According to Head and Gordon Holmes, who had studied a number of these cases, the thalamus is the centre for painful and tactile impulses, for the appreciation of heat and cold and of heat apart from cold, also for the vibration sense. Appreciation of touch and temperature seem to be cortical, for they are lost in Déjerine's syndrome. Questions of comparison are determined by the cortex, as are appreciation of posture and passive movement, which are lost in this syndrome. Further, the cortex focuses attention on sensation and may inhibit sensory impulses which reach the thalamus. The lessening of this inhibition will permit of impulses reaching consciousness which would not do so under normal circumstances. This is offered as an explanation of the subjective pain and discomfort on one side of the body, which is a feature of the Déjerine syndrome. The symptoms of disease of the thalamus will, of course, vary with the exact seat and magnitude of the lesion.

Diseases of the corpus str atum were next reviewed by Professor Hunter, and evidence was offered showing that paralysis agitans is probably due to disease of this body. The symptoms of this disease are recognised in three forms: (*a*) the pre-senile and senile, (*b*) the symptomatic, and (*c*) the juvenile. In the first two, vascular changes are found in the corpus striatum after death, while in the juvenile form the large ganglion cells of the globus pallidus and their neurons are the seat of primary and progressive atrophy. So also with the progressive lenticular degeneration of Kinnier Wilson, where the symptoms have a certain resemblance to the juvenile cases of paralysis agitans, but where the duration of the disease is short and always terminates fatally. Post-mortem examination has shown a symmetrical and bilateral degeneration in the corpus striatum. Again, in Huntington's chorea the pathological anatomy as described by Hunt shows that this is a disease of the same type as the juvenile form of paralysis agitans, the difference being that in the former it is the smaller cells, whilst in paralysis agitans it is the larger cells of the corpus striatum which have undergone

degeneration. A fourth disease with its lesion in the corpus striatum is primary, idiopathic, or double athetosis, sometimes called the Vogt syndrome. Here the larger as well as the smaller cells of the caudate nucleus and putamen are destroyed. The lesion produces athetotic movements of practically all the voluntary muscles and is increased by voluntary movement. Surveying these four diseases, the conclusion might be formed that the essential symptomatology in lesions of the corpus striatum are rigidity, tremor of the paralysis agitans type, choreic movements, athetosis, and mobile spasm. The corpus striatum, therefore, is a centre with certain coördinating and inhibiting functions, controlling associated and automatic movements. Professor Hunter concluded with some speculations as to the presence in the central ganglia of centres for the emotions as well as for the various viscera, and pointed out that lesions of the optic thalamus might cause loss of emotional movements as expressed by the facial muscles, while this does not occur with lesions of the corpus striatum.

At the close of the meeting a vote of thanks was awarded Professor Hunter for his interesting address.

Reviews and Notices of Books.

THE LIFE AND WORK OF SIR JAGADIS C. BOSE.

An Indian Pioneer of Science. By PATRICK GEDDES. London: Longmans, Green, and Co. 1920. Pp. 259. 16*s*.

IT may be possible to write a good biography of a man who is still alive; it is certainly very difficult. Professor Geddes has not succeeded. There is inevitably a feeling that it would be indecent were the author to be cold-blooded and honest enough to strip his subject really naked and hold him up for the world to look at. In the present case there is no exhibition of this sort; we feel that we are not being shown more than is proper for us to see, and we get no clear impression of what sort of man Bose is. Professor Geddes's admiration of him is plain enough, and so exaggerated is his expression of it that the whole is entirely unconvincing. It is not very much to ask that one who, as he tells us, has lived for 40 years in the discipline of the pursuit of natural knowledge should avoid patent hyperbole in giving an account of the scientific work of a brother pilgrim. But it is simply nonsense to say (p. 204) of Bose's discovery that direct stimulation induces contraction and indirect stimulation expansion, that it is a generalisation which will rank as high as the universal theory of gravitation. "Direct" and "indirect stimulation" are in no sense ultimate terms, nor are "contraction" and "relaxation" fundamental biological realities. From the English world of science Bose, no doubt, did not always receive the recognition which many would have liked for him and which he deserved; but ill-natured criticism and opposition is not worth the emphasis it receives, and only a partisan could say that Burdon-Sanderson's mind was "one of authority and influence, accustomed to be unquestioned" (p. 100). Is it possible that there were faults on both sides?

The pity of it is that the story of Bose's life would probably be of almost unique interest if it were dealt with in a sober manner and not by way of propaganda. Bose is the first Indian in modern times to achieve considerable success as an independent seeker after new knowledge in natural science. It has been commonly supposed that his countrymen are temperamentally unfitted for this sort of progress. As a whole it may be that their attainments in imaginative literature are less unexpected, though it is open to suspect whether the mentality of Bose and his friend Tagore are really of such diverse kinds. His originality and independence of mind are clearly brought out in the interesting narrative of his discoveries, and no one can fail to admire the pluck and spirit with which he pursued the path he had mapped out and achieved success; perhaps some day we shall have a better account of how he did it.

MATERIA MEDICA AND THERAPEUTICS.

1. *Materia Medica, Pharmacy, Pharmacology, and Therapeutics.* Seventeenth edition. By WILLIAM HALE-WHITE, K.B.E., M.D. Lond., M.D. Dub. (Hon.), Colonel, R.A.M.C. (T.). London: J. and A. Churchill. 1920. Pp. 712. 10*s*. 6*d*.

2. *A Treatise on Materia Medica and Therapeutics*, including Pharmacy, Dispensing, Pharmacology, and the Administration of Drugs. By the late RAKHALDAS GHOSH. Eighth edition. By B. H. DEARE, Lieutenant-Colonel, Indian Medical Service, and BIRENDRA NATH GHOSH, F.R.F.P.S. Glasg. Calcutta: Hilton and Co. 1920. Pp. 698. 9*s*. net.

3. *The Queen's Hospital for Children Pharmacopœia*. Sixth edition. Prepared by a Committee of the Medical Staff. London: H. K. Lewis and Co., Ltd. 1920. Pp. 76.

1. We welcome a new edition of Sir William Hale-White's "Materia Medica, Pharmacy, Pharmacology, and Therapeutics." The present issue is the seventeenth, the first having appeared in 1892. The work is so well known—probably few medical works of any kind occur so commonly on the shelves of students and practitioners alike—that no detailed description of its contents is called for. The war regulations have been omitted from this edition, and the whole book has been revised. The results of much recent pharmacological research will be found in these pages, but practitioners would have liked to see some reference to the benzyl derivatives, particularly benzyl benzoate, which, as a result of the work of Macht and others, are being used with apparent success in the treatment of various conditions associated with spasm of unstriped muscle, notably dysmenorrhœa and bronchial asthma. It must be admitted that in a manual dealing with pharmacy, pharmacology, and therapeutics, as well as materia medica proper, very much space cannot be devoted to the last-named subject, which is commonly regarded as the least interesting in the medical curriculum. It is, nevertheless, to be regretted that students are not, as a rule, given any encouragement to acquire more than the barest and dullest outlines of the subject. A piece of rhubarb, for example, acquires fresh interest when one learns that by pass and river it has been brought to the Chinese coast from the Tibetan and neighbouring mountains, and that in the same regions the root was collected as many as 1000 and possibly 2000 years ago, to be carried westward by caravan through Persia to the Levantine ports. Again, the discovery of cinchona by the Spaniards in Peru and the derivation of its name from that of the wife of a viceroy, Ana Countess of Cinchon, who by its use was cured of fever, is not without a suggestion of romance; it may be added, also, that the present-day cultivation of cinchona in India is a matter of great imperial interest in view of the necessity that we should be independent of foreign countries as far as the supply of quinine is concerned. It is not suggested that much information of this nature should be incorporated in the book under review, and we would not willingly add to the ever-increasing number of facts which require assimilation, but we do think that in the teaching of materia medica to medical students in general some slightly greater effort might be made to clothe the dry bones of the subject. Of this manual, regarded more particularly as a handy work of reference for the general practitioner, it may be said that no book dealing with similar subjects can be more confidently recommended.

2. The fact that Dr. Ghosh's treatise on Materia Medica has reached its eighth edition is evidence that it serves a useful purpose and that it is widely used by those requiring information on the subject both in its general aspects and in those relating to Indian products and methods of practice. The work is divided into sections headed as follows: Materia Medica proper; Pharmacy and Dispensing; Pharmacology, Materia Medica and Therapeutics; Vaccine and Serum Therapeutics; Organotherapy. In the section on Pharmacy and Dispensing more precise information is given on such subjects as the choice of pill excipients

than is generally found in similar text-books. The section dealing with Materia Medica and Therapeutics occupies the greater part of the book; most of the commonly used remedies are dealt with and are divided into groups according to a system of classification, partly chemical and partly pharmacological, the members of each subdivision being treated alphabetically. Unofficial as well as official preparations receive attention. The subjects dealt with are necessarily of a heterogeneous nature, but we notice here, as in other books of this type, a regrettable tendency towards digression into matters which cannot be treated satisfactorily in the space available. Such extensions commonly lead to statements which, without the necessary qualifications, must be misleading; here we have the subject of the practical administration of chloroform and its dangers dismissed in a little more than two pages, and we read, "directly the corneal sensibility is lost or respiration becomes stertorous, the inhalation must be suspended." The space devoted to such matters might well be occupied by a section on the newer antiseptics, and the pharmacology of some of the more important drugs might be more fully treated; no mention is made, for instance, of the view that the action of alcohol upon the central nervous system is depressant from the first. Among points which require correction for the next edition are the chemical formula of picric acid and the expression "atoms of methyl" (p. 491); also the Latin of the model prescription on p. 114 does not strictly conform with the usual custom.

3. We have received a copy of the Pharmacopœia of the Queen's Hospital for Children (sixth edition). The book is well produced, and is quite sound in both therapeutics and pharmacy. Among the additions are a group of useful formulæ for emulsions with a petroleum basis; thus we have petroleum emulsion with hypophosphites and pancreatic solution, with bismuth carbonate, cascara, salol, &c. Appendices contain information on such matters as poultices and enemata, together with useful data concerning the weights and heights of normal children, head circumferences, and so forth. We think, however, that the advice to mothers on infant feeding, summer diarrhœa, and the management of rickety and other ailing children, which is also included in the appendices, although most valuable, hardly finds a suitable place in a pharmacopœia. This little formulary should prove a distinctly useful aid in prescribing for children's ailments.

SELECTED LECTURES AND ESSAYS.

Including Ligaments, their Nature and Morphology. Fourth edition. By Sir JOHN BLAND-SUTTON. London: W. Heinemann. 1920. Pp. 320. 15*s*.

Sir John Bland-Sutton's views on the morphology of various ligaments have been for many years as household words to the student of anatomy, and it is a pleasure to welcome this new issue of his well-known essays. The morphologist may not, perhaps, always see eye-to-eye with the author in some of the subjects dealt with, but this does not affect the fascination of Sir John Bland-Sutton's treatment of them, nor the stimulus to thought which they provide. These anatomical essays are followed by several interesting short chapters on various subjects, among which are some of surgical interest. These include certain lectures given at the Royal College of Surgeons of England and elsewhere. In some cases the original essays have received additions, and, moreover, illustrations of cases in which, during the war, foreign bodies formed emboli, and an account of a convoy, are indications that the volume is not merely a reprint. Altogether this is an interesting book to read, and a valuable record of many and various items of out-of-the-way information.

THEORY AND PRACTICE OF NURSING.

By M. A. GULLAN. London: H. K. Lewis and Co., Ltd. 1920. Pp. 214. 10*s*. 6*d*.

Miss Gullan has given to nurses in training a text-book which should supply a definite need. Chapter follows chapter in well-ordered sequence. The text is well written, instructive, and suggestive, the definition of terms clear and concise, whilst the blank pages for notes and commentaries are calculated to encourage observation and to develop perception. Miss Gullan has divided her chapters neatly. First she describes physiological functions and the natural processes of elimination; she then states the changes which take place during the development of pathological conditions and enumerates the artificial means adopted to alleviate discomfort and assist in natural recuperation. Finally, she introduces her students to the nursing of medical cases and completes her work by the addition of a valuable appendix.

In a future edition Miss Gullan might advantageously enlarge her text by the addition of chapters on the nursing of surgical cases. So competent a teacher must have much interesting and instructive information to impart on this subject, and her failure to deal with it leaves her present work apparently incomplete.

INDEX OF PRACTICAL NURSING.

Second edition. By J. BASIL COOK, M.D., D.P.H. London: Baillière, Tindall, and Cox. 1920. Pp. 170. 6*s*.

Dr. Cook's book, which has now reached a second edition, contains clear, concise statements of essential facts devoid of all descriptive matter. The subjects, arranged in alphabetical order to facilitate reference, follow each other in incongruous sequence and raise the question as to the desirability of this method. The texture of the work is uneven; at times it reaches a high level of excellence, which unfortunately it fails to maintain throughout. Many of the paragraphs require careful revision, particularly those relating to the eye, the preparation and application of poultices, the nursing of tracheotomy cases, and the laying-out of the dead. In a future edition the author would be well advised to rewrite many of the sections so as to bring them within the scope of modern teaching, as the terse phrasing renders the work invaluable for rapid reference.

JOURNALS.

Military Surgeon.—In the issue for August are several semi-official articles of great interest to medical administrators as they deal with the work of the medical corps of the United States Army in the war. Lieutenant-Colonel Morris gives a history of the overseas division of the Surgeon General's office which provided all the medical units for the American Expeditionary Force general hospitals, laboratories, optical units, repair shops, surgical groups, museum units, &c. Hospital beds were provided for 15 per cent. of the force. The hospital corps was calculated at 10 per cent. of the total personnel of the army, and that proportion while it proved necessary was never attained. Colonel A. N. Stark tells of the medical organisation of the American Expeditionary Force in France. Incidentally he mentions how seriously the American offensive in the Argonne in October, 1918, was hindered by the influenza epidemic, and how that menace was successfully met. The troops were kept in the open, the sick were carefully isolated and masked, cases with pneumonia were sent to the nearer hospitals, uncomplicated cases were sent farther down the line. In the result the field army had fewer cases than the training areas and base sections. Immediately after the armistice the United States Army (its one foe, Germany, being out of action) began to return home. The conditions in France made it necessary that the men should be thoroughly cleaned before embarkation, and this task was, with commendable readiness, assigned on Nov. 21st to the Chemical Warfare Service, which had had a considerable organisation, now no longer required, for washing men clean of mustard gas. The medical director of the Chemical Warfare Service, Colonel H. L. Gilchrist, Medical Corps, U.S. Army, was placed in charge of the new Bathing and Delousing Division, and tells here of its activities. The personnel, 59 officers, 214 other ranks, all came from the medical service. Colonel Gilchrist is strongly of opinion that this work should be done by—that, indeed, it can only be carried through by—medical officers. The men were educated and their intelligent helpful collaboration was secured by circulars, posters, and kinematographs showing the habits, parasitism, and dangers of lice. The fundamental principles are to supply clean underclothing simultaneously with the bathing, thereafter to keep the cleaned men completely separated from the others and to see that their quarters are clean. In the large camps medical officers in three daily shifts, in groups of seven, examined every man when washed, and sifted out men not yet clean or those with diseases of heart, lungs, throat, skin, &c., and

sent them to hospital. Consequently units took back with them to the United States only men clean and sound.

Majors Francis and Hall and Captain Gaines report the treatment of 26 influenza cases, all serious on admission, in Texas in January and February, 1920, by intramuscular injections of 100 c.cm. or so of serum from convalescent patients. Their results were promising, as not one of these bad cases died (the death-rate in 219 control cases was 2·7 per cent.), and only a single case got pneumonia (4 per cent.), but 13·7 per cent. of the controls. Pyrexia lasted three and a half days among the 26, but five and three-quarters among the controls. The authors think that if the mere serum of convalescents can produce so good a result, it is reasonable to hope we shall by and by get a really effective antiserum.

Colonel P. M. Ashburn summarises and discusses some statistics on venereal disease he had collected since the war from 15,000 soldiers. He finds that 34 per cent. nowadays are chaste, a higher percentage, he believes, than in the pre-war army. This improvement he ascribes to the more active moral and antivenereal teaching of the day, and to the educational and vocational trainings recently instituted, which have brought into the army a better class of recruit. Of the unchaste, 11 per cent. become infected every year. All the general hospitals at district headquarters of the U.S. Army are to be called after distinguished officers of the Medical Corps. Thus, that in California is named Letterman General Hospital, San Francisco; that in Washington, D.C., is named after Walter Reed, who died in investigating yellow fever; the Fitzsimons General Hospital in Denver, Colorado, keeps alive the memory of Lieutenant W. T. Fitzsimons, who served as a Red Cross surgeon in France in 1914 and 1915 and, returning to France in 1917 with the American Army, was the first officer of the United States Army killed in the war—a young man of promise, deeply regretted.

The *Military Surgeon* for September is a "Navy Number," and contains an appeal for medical officers for the navy. It has also a long article on Morale in Naval Hospitals, by Lieutenant Commander J. T. Boone, full of interesting *obiter dicta*. His argument is that preparedness, to be national, must be individual, and in the individual the mind must first have attention. What condition is to the athlete's body, morale is to the mind; it is both fighting power and staying power, and gives strength to resist demoralisation and its causes—fear, discouragement, and fatigue. This raising of the morale of troops was in the past the work of individual leaders, the characteristic of great leaders of men, but Congress has now recognised its importance, and has definitely decided to work towards it in the army and navy. In this Congress is but following the action of the whole nation in the war, when by its welfare associations it did everything that could be thought of to secure the comfort and contentment of its fighting men. This is not a function of "The Government" only, it is a function of the nation which is responsible that the Government shall carry it out. The people, however, like to have a more personal share in it, so the Government allows a share to the people's organisation, the Red Cross. It is not intended to pamper the sailor but to increase his military efficiency in such ways as shall make him feel that the nation is proud of him and is supporting him to its utmost. Within the Service everyone, from the Secretary of the Navy to the last-joined recruit, has his own responsibility for this morale and must maintain it. Specially necessary is it to consider this in the hospitals where the patients have for the time ceased to be members of a team, have become mere individuals, amongst whom are the abnormal minds and the weakened bodies of the Service. The work of the hospitals must therefore be re-creational, best achieved by recreation, the aim being to discharge the patient from hospital cured, not weakly or self-centred, but at once fit and ready again to take his place in the Service team. This will be all the easier now as there has been established in the Navy Office a sixth division, the Morale Division. On it sits an officer from the Surgeon-General's office, Lieutenant-Commander Boone, who supervises the morale work in hospitals, which looks after the patients and does not neglect the staff, officers, nurses, or orderlies. This work is the chief duty of the officer commanding the hospital, who may, however, delegate the detailed conduct of the work to some other creditable officer. There were formerly officers who believed that unlimited authority and ability to use profane language was enough. Their day is done. An officer nowadays must be a leader.

He must be sympathetic and approachable. In this he must be supported by the Service, which must itself work on similar lines. In the war the Red Cross provided recreation and entertainment. This is now taken over by the navy itself. The officer commanding the hospital must encourage athletics amongst the staff. Even weak patients become stimulated by looking on. Occupational therapy is doing great work. Libraries are necessary, and a good librarian who brings sound books and advises the patients what to read. He lessens their tedium, and his daily visit with his book-truck, of such a height that bed patients can see the books, is welcomed. Encourage the canteen. Sixty per cent. of the welfare expense is borne by the canteen, the rest by the navy, except a small share by the Red Cross. The recreation rooms in hospitals are great centres; sometimes they have guest rooms for relatives who are visiting patients; they may have barber and tailors' shops, &c. "Home Service" comes in; asking men to write to their relatives, handling family business difficulties, getting hold of deserters and bringing them back before the police are concerned with them, and so on. This article is full of new and valuable ideas.

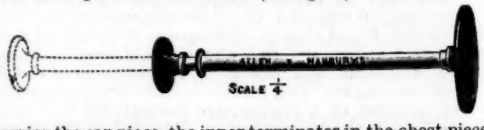
And so is Lieutenant Fulton's article on feeding patients, founded on the aphorism "The way to a man's convalescence is through his stomach." In the U.S. naval hospitals there is a commissary officer, a warrant officer, whose duty lies in providing good, well-cooked, varied food for patients on the ordinary diet. He must be ready to welcome suggestions from everyone, though he maintains in himself a well-developed sense of discrimination. He sees patients get all the food they want and get it hot, and prevents waste. These warrant officers seem to be the equivalent of the wardmasters in the British Navy. Other papers tell of a special psychiatric clinic, and of a physiotherapeutic section in the New York Naval Hospital, where electrical treatment of all sorts, massage, and medical gymnastics are used to accelerate convalescence, and make patients thoroughly fit, with machines to reduce all stiffnesses and re-educate in lost movements.

Journal of Anatomy. Vol. LIV., Part IV. July, 1920. Cambridge University Press. Pp. 60. 7*s.* 6*d.*—Professor R. W. Reid opens this number with a record of motor points in relation to the surface of the body, a complete collection of reliable data which will be, without question, of great use in practice to the clinical electrician.—Dr. J. C. Brash and Professor M. J. Stewart give a detailed account of an exceedingly rare condition, partial transposition of the mesogastric viscera. It seems to us that there are considerable difficulties in accepting the authors' suggestions as to explanation in this case, but the data given about the relations of the vessels, &c., do not permit any dogmatic statements on the matter; the specimen is in any case most remarkable, and is not less so because it is adorned by 13 spleens.—Miss Elizabeth Fraser writes on the Pronephros and Early Mesonephros in Cats, and comes to the conclusion, inter alia, that these two parts of the embryonic excretory system make a continuous organ. The paper is full of detailed facts, and is very well illustrated.—Dr. Edgar F. Cyriax follows with lists of absolute and relative measurements of human vertebræ.—Dr. W. N. F. Woodland records the persistence, in Indian goats, of the umbilical arteries as blindly ending trunks, a fact which might be turned to account in blood-pressure experiments.—Dr. Sydney J. Cole gives a good illustrated account of the fissural pattern in four Asiatic brains—Chinese, Japanese, Goanese, and Arabian. The paper will be of interest to any anthropologist inquiring into racial varieties of the brain.—Professor N. Pan contributes further observations on the gastro-intestinal tract of the Hindus. From his observations on 149 subjects Dr. Pan reaches the rather unexpected conclusion that the length of the intestinal canal is rather shorter in Hindus than in meat-eating races, but he does not explain the increase in length known to occur in the Japanese and Chinese with an almost similar diet.—The number closes with a review of Cunningham's "Manual of Anatomy."

New Inventions.

A NEW FORM OF STRAIGHT MONAURAL STETHOSCOPE.

THE "telescopic" stethoscope which I have devised is simply a straight monaural stethoscope capable of adjustment to various lengths by means of two metal tubes which are telescoped in one another (see figure). The outer tube



carries the ear-piece, the inner terminates in the chest-piece; a screw on the distal end of the outer tube makes it possible to fix the tubes in any position. The rigid monaural stethoscope acts as a resonator and therefore increases the sound, which has the same pitch as the stethoscope. By examining the healthy heart with the "adjustable stethoscope" at various lengths of extension I find that the mitral sounds, especially the second, are more clearly and loudly heard with the extended than with the closed instrument, but that the reverse holds good for the aortic sounds. A clinical report is in hand. The instrument is made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, London, W.

Hove. NOEL ALDER, L.M.S.S.A. Lond.

THE LANCET.

LONDON: SATURDAY, OCTOBER 23, 1920.

A Site for the University of London.

ON Wednesday last a serious question which has been under discussion, even acute discussion, for 20 years came one step nearer to a solution, when the Senate of the University of London accepted, under conditions, the offer of the Government of the Bloomsbury site for the erection and re-erection of the central buildings of the University, now located at the Imperial Institute, and of King's College, lying adjacent to Somerset House. No attempt can be made to tell in detail the serial which precedes this important chapter in the story, but salient points can be given which will make clear what has happened.

The question of a site for the University of London has been the subject of discussion from every point of view since the vacation of the home in Burlington Gardens, and certainly ever since the Imperial Institute buildings have proved unsatisfactory. How unsatisfactory may perhaps never be accurately known, because the University by its constitution, or constitutions, and by its ideals, can rarely be in a position to express a corporate opinion. The division into external and internal students postulates a party which aims at an examining board of an Imperial type, and a second party which considers the maintenance of close relations between students and teachers to be an essential function of a university. In all matters of site and buildings what suits the hopes of one party may controvert those of the other. Still, we presume that obvious reasons against attempting to maintain the University of London at Kensington Gore have prevailed, and that no one can dispute the wisdom of the intention to remove elsewhere. But where? The immediate answer in the minds of most has been, to the original site in Gower-street, but certain alternatives, some of them not only specious but having something to be said for them, have been brought to public notice. That the University centre should be Somerset House itself has been suggested in the columns of THE LANCET, and no one can deny that Chambers's eighteenth century palace would be a dignified centre for any university in the world. It stands in the absolute heart of London, and alongside of it lies one of the colleges of the University. But if ever there was a symmetrical building, incapable of adaptation or addition, it is Somerset House, and having noticed the idea it is sufficient to say that it has found, we believe, no practical supporters. Those who, unlike the advocates of the Somerset House scheme, see no particular virtue in the University being placed in the centre of things have recommended various picturesque sites in the neighbourhood of London—Roehampton and Hampstead, for example, and an eloquent plea has been published for the erection of the University at Ken Wood, where there is a wonderful stretch of natural woodland placed in such a position to Hampstead Heath that it can never be encroached upon, and where there is sufficient ground for the complete erection of a modern university. The Ken Wood site being regarded as impracticable, if only because of the tax of distance thus placed upon a teaching staff, many of whom would be residing in town proper, it would seem that any other suburban site must be still more undesirable. To leave the centre of things is always the easy policy, because by so doing all the vested environmental difficulties are avoided; elbow room is given for building; and the burden of rates is less. These advantages, however, have to be weighed against the disadvantage of adding a time and distance factor to all the organisation of the university. To our minds, from a teaching point of view, and remembering the importance of the Faculty of Medicine to the University of London, to leave the centre of things must be wrong, and we do not think such a move has ever been seriously contemplated by the authorities. The real question surely was, Would the University avail itself of the opportunity given it by the Government, upon agreement with the Duke of BEDFORD, to obtain near to its original home in Gower-street the land necessary for the erection and conduct of a great modern university? A conditional acceptance of the offer has now been received.

The arguments for the acquisition by the University of London of the Bloomsbury site are very strong. The new buildings when erected will be in immediate continuity with the original dignified and sensible buildings of the University; the geographical position is good, for the site is accessible for students and teachers alike; and although this implies its vicinity to big railway centres the actual site would be in a quiet place. It is true that the site is traversed by thoroughfares, but the University and collegiate buildings of Oxford and Cambridge are also traversed by thoroughfares, and the fact does not interfere either with their general educational facilities or even with their collegiate pattern. Moreover, it should not be impossible to close one or two of the thoroughfares which particularly spoil the amenities, and this without the slightest hardship to the public. This is the site which the Government has offered to the University on terms, and the difficulties in its acceptance have not proved insuperable, if the reservations made by the Senate can be fairly met. It has been said, for example, that the authorities of King's College are reluctant to move from their present position adjacent to Somerset House, and also that they have not been offered fair terms by the Government. With regard to the first point we understand that if a fair offer was made King's College was perfectly willing to move to the Bloomsbury site, there to be erected with all the additional accommodation and improvements that will necessarily follow With regard to the second, as the terms have not been disclosed in so many words, and as they are dictated by considerations which have been misunderstood, it is manifestly unfair to hold any dogmatic views. For our own part, we hope that negotiations, which have not yet reached the final stage, will result in King's College being placed in possession of a substantial sum of money for building at Bloomsbury. And King's College is, of course, not the only claimant for space in the Bloomsbury site; room has to be found for central university buildings, and possibly for the further extension of University College. Here again there seems to us to be ample space in the projected

site, especially if a small readjustment of thoroughfares is made. Those who have criticised the site on the ground that it is too small will always have the sympathy of far-sighted people, for it has been shown over and over again by great institutions that timidity in buying an original site has compelled them to make additions to their grounds at great cost, and sometimes that great cost has been due to the prestige of the institution itself, no other reason for the rise in adjacent values being forthcoming. There is no reason to doubt that, when the University is established, opportunities will arise for the purchase of adjoining property.

It will be seen by the foregoing that we are extremely pleased to learn the decision of the Senate of the University of London to come to terms with the Government in respect of the Bloomsbury site. Many opinions have been publicly expressed to the effect that the Senate was being hustled into premature decision, but having regard to the duration of the time which has elapsed since a universal agreement was reached that "something must be done," we cannot see any precipitancy in the decision of the Senate or any undue haste on the side of the other partners to the bargain; and though the issue of that bargain may not leave the University in the favourable position which many claim as her right, we cannot see that the charges of inconceivable meanness brought against the Government have been substantiated. The Government secures the existing sites, one of which is obviously of extreme value to it, but they give in Bloomsbury a site which is five times as large, a sum towards the rebuilding of King's College upon that site, and the assurance that further money will be forthcoming from the University Grants Committee. Until the figures are known it is impossible to say what pecuniary advantage the Government is receiving if the arrangement now goes through. The University, of course, is face to face with great expenses. For apart from the reorganisation of King's College, such central buildings as the great assembly hall or senate house, committee rooms, and lecture halls will have to be provided. These must be in the centre of things, but libraries and museums of a special character, laboratories, and hostels can surely be relegated to convenient places on the periphery, and especially in regard to hostels the claims put out for beautiful sites on the wooded slopes around London are valid.

With a lead given to them by a large proportion of their graduates, and by the Education Committee of the London County Council, it was generally anticipated that the Senate would take the offered site, but their conditions form no weak surrender. They accept the Bloomsbury site on the terms as regards maintenance and rates of headquarter buildings laid down by the Treasury Minutes of 1899, and the letters of this year from the Minister of Education to the Vice-Chancellor, but stipulating five things: (1) that the grants for maintenance and rates shall not be confused with grants for educational purposes; (2) that the University shall have discretion as to the detailed use of the site; (3) that the University and King's College shall retain their present homes on unchanged terms until their new homes are ready for occupation and free from debt; (4) that the new University headquarters shall contain 50 per cent. more floor-space than exists at the Imperial Institute; and (5) that the pecuniary settlement in respect of King's College shall be a matter for separate negotiation between the Government, the University, and the College.

The Colonial Medical Services.

IT is a trite saying that history repeats itself but it is none the less a true one, and its truth has once again been demonstrated by the issue of the Report of the Departmental Committee appointed by the Secretary of State for the Colonies to inquire into the Colonial Medical Services. So long ago as 1896 Sir GEORGE EVATT suggested a comprehensive scheme of reform,[1] which in not a few particulars closely resembled that now advocated in the Committee's Report. That the latter will share the fate of the former and be relegated to the limbo of forgotten things is happily unbelievable. Indeed, there is already evidence to the contrary. A careful perusal and study of the White Paper now presented, the contents of which were published in THE LANCET of Sept. 25th, show that the Committee's findings are sound and that the scheme advocated, if carried out in its entirety, will go a long way towards improving a Service notoriously discontented in the past, and may, indeed, enable that Service to attain, in the words of the Committee, "to a very high, possibly even to the highest, status amongst the public medical services of the Empire." That these are consummations devoutly to be desired no one will deny, and those best acquainted with the history of medicine in our colonies are persuaded that some such scheme of reform is urgently required. Let it not be thought that nothing has been done in the past. In 1902 a committee appointed by Mr. J. CHAMBERLAIN discussed a scheme for the amalgamation of the medical services in the West African Colonies and Protectorates, and action taken upon its report greatly improved the conditions of these services and was followed by an increase in applicants for posts. Again, in 1909, a Departmental Committee of the Colonial Office, which included two of the members of the latest Committee, considered various questions affecting the West African Medical Staff and issued an important and useful report which, amongst other things, resulted in the creation of the now well-known Advisory Medical and Sanitary Committee for Tropical Africa. The war, however, with its legacy of trouble, did not spare the Colonial Medical Services, and the conclusion of hostilities found them in a state of great unrest. This was specially true of the East African and Uganda Services, where the conditions were most unsatisfactory, and where medical officers found it well-nigh impossible to carry on. Representations were made to the Colonial Office from the colonies themselves, from the Advisory Committee, and more especially from the British Medical Association, which took up the matter very strongly, and played an important part in securing the appointment of a special committee to consider the whole question.

The Report considers in the first instance the creation of a unified service like the Royal Army Medical Corps, but, while admitting that this is the ideal to be aimed at, it concludes that its full attainment is at present impossible. A loophole is, however, left, for the suggestion is made that the Committee's proposals be reviewed in five years' time. The Committee's hesitancy in this matter is well founded. Anyone familiar with the conditions of medical service in the various colonies will recognise that at present the gulfs fixed cannot be bridged; too abrupt a

[1] Brit. Med. Jour., ii. 863.

realisation of the ideal would lead to chaos, but the day will come when the policy of unification may safely be carried into effect. Its advantages are listed in the Report, and amongst them the most important arises from the fact that in any scheme of unification it will be necessary to appoint a "medical chief" to whom the professional staff can apply for counsel and support. At present any appeal must be made to a layman, and, however well disposed and however sympathetic the latter may be, in the very nature of things he cannot appreciate all the phases of a medical or sanitary problem, or for that matter, the point of view of a medical man, as would a chief trained professionally. The wonder is that the necessity for such an appointment has not long ago been admitted. The majority of the Committee are of opinion that whoever is appointed to this post should bear the title of Director-General, but a consideration of his duties as detailed in the Report, and still more of the matters stated to be outside his scope, conveys the impression that such a title is a misnomer. How is any man to direct the medical services of the colonies if he is to be debarred from visiting them? It may be said that no one will be appointed who is not already familiar with colonial work, but it would be difficult, if not impossible, to find a man conversant with the conditions in all the seven geographical departments which constitute the present organisation of the Colonial Medical Service. Even if such a man were forthcoming, it must be remembered that conditions change so rapidly in the tropics that it is essential to renew experience and to refresh memory on the spot. The historic visits of Mr. CHAMBERLAIN and Mr. CHURCHILL showed the quickening influence which can be exerted by a Secretary of State who can find time to inspect occasionally our far-flung possessions. Doubtless there are good reasons why the proposed medical chief at the Colonial Office should not visit the colonies in an official capacity, for it is intended that disciplinary matters should remain, as heretofore, in the hands of the governor and principal medical officer of each individual colony. It is not the limitation of functions which is open to question, but the suitability of the title. The holder of the post is clearly intended to undertake the duties of an adviser, a liaison officer, and what in Weltpolitik is called a buffer state, hence the title Adviser-General would appear more apposite and less open to misconstruction. After all, however, the name matters little, the man himself much; for he must be endowed with abundance of patience, tact, and sympathy if he is to be successful, while, as he is not to be debarred from expressing opinion on medical and sanitary questions, he must possess wide knowledge of tropical conditions. The Report deals wisely and well with the subject of personnel. It shows how desirable it is to recruit recently qualified men, and if they do not possess the necessary experience, to have them seconded for resident hospital appointments before they proceed abroad. It favours entry to the Service by competitive or qualifying examination, but takes care to indicate that special qualities are required in the case of men becoming medical officers in a Government service. It might have added "and in tropical countries."

An important section of the Report deals with the assimilation of the medical services in neighbouring colonies. The experiment has been tried on the African West Coast and has been highly successful, but after careful consideration the Committee finds that assimilation can only with advantage be applied to the medical services of the Straits Settlements and to those of all the East African Protectorates, including Tanganyika Territory and what is now known as Kenya Colony. The formation of Malayan and East African Medical Services is therefore recommended, and these, together with the West African, would comprise two-thirds of all the colonial medical appointments. The question of linking-up the West African and the East African Services presents difficulties and is shelved for the present. It is certainly better that the East African Service should have time to consolidate before any further incorporation takes place. The Committee urges the appointment of "Inspectors of Medical Services." This recommendation will be hailed with the greatest satisfaction by medical officers, and if carried into effect will probably do more to encourage efficiency and to advance the cause of medicine and hygiene in our African possessions than any other finding of the Committee. We say African advisedly, for the Inspectors are expected to confine their work to the East and West Coast Services. It is held that other parts of the Empire can be adequately served by the special or occasional visits of tropical experts. In this connexion it should be remembered that in certain of the West Indies the medical and health officers are badly in need of encouragement and information. A great deal of the past discontent was due to inadequate pay, prospects, and pensions, and to these matters the Committee has directed special attention, and has suggested as a minimum salary for medical officers at least £600 per annum. This is only fair and reasonable considering present conditions, and the fact that many a medical officer has perforce to keep up a double establishment when his wife and children are in this country. The necessity for study leave has not been forgotten, and the proposition that such leave should be on full pay and that the fees should be paid by the Government will be considered by most a fair one, provided adequate guarantees are forthcoming. The principle of specialist appointments, recently adopted in the army, is advocated, and a strong plea is advanced in favour of granting all possible opportunities for research work. The creation of an auxiliary medical service in West Africa, following the early establishment of a medical school, is put forward for serious consideration. For such a development even a finer field exists in Uganda, thanks to the qualities of its inhabitants and to missionary effort in the past.

The Report, as a whole, is wise and far-seeing, and is receiving the sympathetic consideration of Lord MILNER, who, in a letter to Sir WALTER EGERTON, Chairman of the Committee, points out that some of its recommendations had already been anticipated and that others are in process of adoption, at least in certain localities. So far so well, but behind the Secretary of State looms the shadow of the Treasury. Hence it is well that the Committee has expressly stated that the Colonial Medical Service is a "productive" service, and has insisted upon the fact that facilities for scientific research constitute a safe and sound investment. Will the British Empire, the pioneer country in tropical medicine and sanitation, fail to grasp its opportunities and to rise to the occasion? Thanks to the Departmental Committee, the signpost to the road of progress and

efficiency has been raised. It remains to traverse the path boldly and with confidence, and thereby confer a lasting benefit on the colonies, on those who locally administer them, and on those who dwell within their borders.

Safety in the Air.

THE safety of any transport service, whether by sea, air, or land, depends chiefly on two factors: first, the worthiness of the craft concerned; and, secondly, the controlling and coördinating human mechanism. So long as the machine is new and untried, responsibility rests heavily on the operator. On the railroad mechanical devices protect us in large degree from the dangers of inattention or temporary loss of judgment on the part of drivers and guards, although most of the serious railway accidents have resulted from human rather than material failing. But the Air Service is still in its infancy, although the Air Conference, held at the Guildhall last week under the chairmanship of Lord WEIR, made it quite clear what strides have been and are still being made in the construction of trustworthy aircraft. What was recently held to be a perilous adventure now carries only a very small percentage risk. It need only be recalled that between May, 1919, and March, 1920, there was but one accident for every 1576 aerial flights, while the Handley Page Continental Service carried 3689 passengers in the period from Sept. 2nd to Oct. 9th last without the loss of a single life. The discomfort of air travel, which to many people was almost more deterrent than the danger, is now becoming a memory of the past. The whirring of the engine alone remains as a tiresome thing, probably contributing to any slight disturbance in equilibrium still felt by the passenger; but the point has already been reached at which the unfortunate possessor of sensitive semicircular canals may get as much exhilaration from an air passage as he would formerly have suffered malaise from a sea passage. It must still be long, however, as Wing Commander MARTIN FLACK points out in our present issue, before the control and coördination of the aircraft can become automatic, or at all events as relatively fool-proof as the locomotive engine; and for many years the man stepping into the machine will continue to be a large part of the controlling and coördinating mechanism. Hence it is good to know the extent to which medicine has already been applied in the selection of trustworthy pilots. Many and complicated tests have been devised to detect special aptitude. Naturally the candidate's actual record in muscular equilibration is the most important. Sporting prowess has been found to give that quickness of eye and hand and leg coördination which is essential for the pilot and leads to the smooth working of his automatic response, on which the safety and comfort of passengers depend. Conditions varying so widely as a gastro-intestinal attack or domestic anxiety may diminish or disturb this response and cause a pilot to fly badly or to make bad landings. It is for this reason that at this stage of aeronautical experience a watchful medical service is of the first importance for safety in air navigation.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—The Lord Mayor of London presided at the special appeal meeting held in the Mansion House on Oct. 15th, when Prince Henry accepted the position of President of the institution.

Annotations.

"Ne quid nimis."

CONFERENCE ON INSURANCE PRACTICE.

IMPORTANT schemes for compensating insurance practitioners for alleged loss of capital value in panel practice come up for discussion at the Annual Conference of Representatives of Local Medical and Panel Committees, which is being held on Thursday, Oct 21st, in the Memorial Hall, Farringdon-street, London. In what is known as the Dartford scheme no money changes hands on transfer of an insurance practice, by reason of death or retirement, but the wife or other dependents (or the retiring vendor) receive the panel income for an agreed period, round about a year, the successor and the other insurance practitioners pledging themselves to attend without payment during this period. In principle this scheme closely resembles that recently proposed by the London Panel Committee in which, however, the funds were to be gathered at the source by deductions from the central pool. Brighton is promoting a similar scheme to which adhesion shall be voluntary. Important issues are also at stake in regard to the future of the National Insurance Defence Trust, which has not thus far obtained very general support.

CO-EDUCATION IN MEDICINE.

THE problem of co-education in elementary schools, public schools, or universities must not be confused with that of co-education in medicine. There is still room for controversy as to whether boys and girls should have exactly the same form of general training, and whether they should have it together, even though their actual academic studies may be identical. On the other hand, the medical curriculum is the carefully devised irreducible minimum through which every doctor must pass, whatever his or her subsequent career, and it is not arguable that the examinations or course of studies of the medical woman should differ in any way from those of the medical man. The authorities of one of the mixed medical schools state their position thus: they believe "that if women are to become doctors and to work in conjunction with the present members of the profession on insurance and other committees, it is highly desirable that they should learn the same thing in the same place, and not be segregated in schools of medicine for women only." We think that it is still desirable to retain one or two medical schools exclusively for one sex, so as to allow free choice. It is better to let mutual suspicion die a natural death than to attempt to bury it alive. But it should be remembered that it is really since women have been encouraged to mix in work and leisure with men students that prejudice has given place to respect and confidence.

Opponents of medical co-education base their objections on the grounds: (1) that men candidates for admission are, and will be, crowded out by the women; and (2) that the prestige and popularity of a mixed school will decline, and the male entry will diminish. The latter objection is not likely to be valid for long. The limitation of the number of women students admitted to some definite proportion of the whole entry can be so adjusted that the men do not suffer. The medical schools themselves make no complaint of too large entries, and are prepared to expand their schools if necessary. A suggested danger is that the influx of men and women to a profession only temporarily fashionable may encourage the schools to expand unduly, involving subsequent waste and disappointment. But it is not easy to imagine a medical school that has outgrown its strength. Spacious buildings and equipment are an asset, and schools which decline do so partly because their buildings are old-fashioned or cramped. Overcrowding in the school is, we think, a bogey; nor do we anticipate its serious occurrence in after professional life. But it will not be relieved—of that we are certain—by the failure of any large propor-

tion of women to practise after qualification. That any young woman will submit herself for six years to the strenuous life of a medical student without a serious intention of pursuing the study of medicine in some form strikes us as unlikely. The large majority of medical women do not retire on marriage any more than do women who have adopted the stage as a profession. But even were this not so, one could hardly imagine a better training for potential motherhood than a medical course, followed perhaps by a resident post at a children's hospital, or, indeed, a better preparation for citizen life. Until recently professional life has not allowed men to give the time and thought to problems of housing, feeding, or education which the public demands. It is here that the retired medical woman would be an invaluable asset.

TRANSITORY RECURRENT PARALYSIS IN HEART DISEASE.

AT a recent meeting of the Société Médicale des Hôpitaux of Paris, MM. Achard, Ch. Foix, and A. Leblanc reported a case of a curious and interesting phenomenon in heart disease, which has received little attention—transitory paralysis without gross lesion of the central nervous system. It appears to have been first described in 1897 by MM. Achard and Leopold Levi.

In the present case a chauffeur, aged 58 years, suffering from slight dyspnœa, was admitted to hospital in August, 1919. The heart was enlarged, the apex beat being displaced outwards and downwards, and it was in the seventh intercostal space. At the internal part of the right second intercostal space a double rasping murmur was heard, but not constantly. Radioscopy showed great enlargement of the heart; the right auricle extended much beyond its normal limits and its pulsations were accentuated; the aorta was much dilated. The pulse was 80 and irregular. The maximum arterial tension was 200, minimum 100. Marked pulsation was observed in the carotid and subclavian arteries. The temporal arteries were indurated and sinuous, the radial hard and sclerosed. The liver was greatly enlarged, extending from the nipple to the umbilicus. There was a little ascites. The Wassermann reaction was negative. At the beginning of September, while standing, he was seized with acute precordial pain accompanied by great weakness, so that he nearly fell. He was put to bed and could not speak for several hours. Next morning he complained of impotence of the left arm, which was numb and without strength. The grasp of the hand was found to be enfeebled, and the radial and olecranon reflexes were a little diminished. The patient said that for several hours on the previous evening the left leg was heavy and numb. In January, 1920, a similar attack with the same precordial pain and the same impotence of the left side occurred. But this time the trouble disappeared in a few hours. Eight days later he had a third attack. He was awakened at night by violent dyspnœa, precordial pain, and abundant sweating. The whole left side, and especially the arm, were numb, and there was also paræsthesia of the right foot and calf. Bleeding to 350 g. produced considerable improvement, and on the following day there was only a little paresis of the left hand. But after that the breathing was shorter, there was more cyanosis, and œdema appeared in the legs. The irregularity of the heart increased, the dyspnœa became constant, digitalis and theobromine were ineffective, and death suddenly took place on Feb. 28th. The necropsy showed an enormous heart covered with fat, the ascending aorta greatly dilated, atheromatous and ulcerated. But the valves were supple and efficient to the water test. The brain was congested. It was examined after hardening in formol, and on section seemed to show nothing abnormal. But minute examination revealed that the right brachial centre was a little more greyish. Microscopic sections showed little foci of softening, 4 to 6 mm. long. The pyramidal cells were not recognisable, and the fundamental substance was in process of absorption and filled with granular bodies. The underlying white substance was almost normal, but here and there were little foci, which appeared to be necrotic, filled with round cells and granular bodies. Staining showed some absorption of myelin.

The point of interest in the case is the three attacks of left hemiparesis, principally brachial. The microscopic examination showed that they were due to little foci of necrosis of the right brachial centre. Was the cause microscopic emboli, as in two cases reported by MM. Achard and Levi? In the present case there was no evidence of vascular obliteration. In another case of transient paralysis the necropsy showed only œdema with grains of hæmatoidin in the perivascular sheaths and marked congestion. Why the paralysis recurs with the same localisation is doubtless due to some local predisposition, the nature of which so far has escaped observation. Circumscribed circulatory trouble is thus the cause of the transitory paralysis. It has been observed on failure of compensation, after fatigue, after precordial pain, and after diuresis due to drug administration. It is interesting to compare these transitory paralyses with those described by Sir William Osler in states of high blood pressure and arterio-sclerosis. He adopted the view of Dr. George Peabody, an American writer who appears to have first described them in 1891, and who suggested that they were due to arterial spasm. In a man, aged 56, with well-marked arterio-sclerosis, he observed four or five attacks of aphasia with incomplete right hemiplegia. The patient died in a severe attack in which the hemiplegia became complete. The necropsy showed only arterio-sclerosis of the cerebral vessels.

STATE FOOD QUESTIONS.

THE Department of Scientific and Industrial Research has recently issued three Reports bearing on food questions. They are as follows: (1) The Report of the Food Investigation Board for the Year 1919; (2) A Report from the Canned Foods Committee on Canned Meats; and (3) A Third Report on Colloid Chemistry. All three Reports are issued from His Majesty's Stationery Office. Dealing with them seriatim Report (1) shows continued activity in many important directions. The study of the effect, for example, of cold storage upon the accessory food factors has led to the interesting conclusion that low temperature is not only the best means of preserving food, but that, at all events in the case of fat soluble A, the factor remains undisturbed. As is pointed out, this finding is of considerable scientific importance, since it opens up the study of the influences upon the quantity of vitamine present in milk or butter, of the diet of the animal, and of the season of the year. The call seems to be, in regard to the preservation of food supplies in general, for the establishment on an extensive scale of refrigeratory centres. Different foods, meat, fish, and fruits, however, do not behave alike under this method of conservation and the causes underlying their various behaviour are being carefully studied with a promise of securing parallel results. It is of interest to learn that whereas there has been difficulty in freezing beef without damaging the meat, the tissue dripping, with loss of nutritive material on thawing, there are indications that the problem is nearing solution. No such difficulty has been experienced with mutton. This careful research into the effective methods of preserving flesh foods promises results of the greatest importance to the community.

In Report (2) Dr. William G. Savage deals with the methods used for the inspection of canned foods and their reliability for this purpose. He has gone thoroughly into the matter, but the present report, it is pointed out, is the first of a series. On the whole, the work of official inspection of these foods is proceeding satisfactorily, and Dr. Savage regards the results of his inquiry as showing definitely that a naked-eye examination is all that is required in ordinary cases. This examination appeared sufficient to decide between the sound and unsound, and bacteriological examination confirmed, generally speaking, these macroscopic observations. It is well pointed out, however, that the question of specific food poisoning bacteria or their toxins arises, inasmuch as these do not cause obvious changes in the meat and would be missed by any method of examination except specific bacteriological tests.

The Report (3) on colloid chemistry, while relating largely to industrial applications, contains an interesting allusion to the part played by the colloidal state in bread-making. The chemist in the bakery appears to be superfluous, since, to quote the words of the Report, "the ability of a master baker to feel, taste, and smell the ingredients is a more sure guide in the production of good bread than the

knowledge obtained by use of test-tubes and balance." Still, it is admitted that the bakery chemist will assume supreme importance in the future, particularly in the large machine-productive centres, "but the time is not yet, for he does not know enough and above all the master baker is well aware of the fact." Loaves are by no means standard products, bread differing, as is well known, in consistency and texture according to the sources of supply or even varying from day to day from the same baker. We may agree that the complexity of the colloid systems in a baked loaf is considerable, but that conclusion argues for a continued study of the subject. It is probably a colloidal question which decides the difference between a sodden and a desirably spongy loaf, and there is a physiological and æsthetic preference for the latter.

PRIMARY ACTINOMYCOSIS OF THE CONJUNCTIVA.

PRIMARY actinomycosis of the conjunctiva is an extremely rare affection which may give rise to curious inflammatory lesions of a pseudo-membranous type. Dr. Brunetière,[1] of Bordeaux, reports an instructive example of this kind in a soldier, aged 25, the nature of whose complaint escaped recognition in spite of repeated examination by various ophthalmologists for over two years. The patient had been engaged for several weeks in cleaning mattresses and brushing old cloaks which had been sent back from the front, when in September, 1917, he began to suffer from conjunctivitis of the left eye. On admission to hospital the eye presented a profuse purulent discharge and a yellowish-white exudation, covering the whole of the tarsal and bulbar conjunctiva. The cornea, which was partially invaded, showed a diffuse haziness. During the course of the next two years the appearance of the conjunctiva underwent but little change, and the infection of the cornea became complicated by iridocyclitis, which ended in complete loss of vision and atrophy of the eyeball. Diphtheria bacilli were apparently present on bacteriological examination, but large doses of diphtheria antitoxin were quite ineffectual, and numerous local applications, such as silver nitrate, potassium permanganate, methylene blue, and argyrol, were equally valueless. It was not till January, 1920, that the possibility of a mycosis was entertained, and in the following April microscopical examination showed the presence of the ray fungus in the lesions. Under treatment by iodide, which was commenced in January, the conjunctival lesions began to clear up and the false membrane entirely disappeared. The case shows that in pseudo-membranous conjunctivitis the diagnosis of diphtheria should not be hastily made, even when the presence of diphtheria bacilli is reported; the xerosis bacillus, which grows very readily in pseudo-membranous conjunctivitis, may easily be mistaken for the diphtheria bacillus.

TEMPORARY OR PERMANENT PENSION?

THE justice of periodic medical examination of disabled men has recently been called into question by a distinguished cleric, who submits that "after a fixed number of examinations (say four) there might well be a life pension granted." From the point of view of national health the suggestion deserves careful consideration, on the analogy with the victim of traumatic neurosis, whose condition may not improve until compensation claims are permanently and finally settled. Its immediate adoption, however, would appear premature and unfair both to the nation and to the man. In a few years' time the permanent injury to health of those still receiving pensions will be capable of accurate estimation, unobscured by sentiment, economic considerations, or the difficulty of prognosis. The assessors will then be in a position to evaluate the progress, if any, of the damage, and to judge to what extent the man's earning capacity is likely to be progressively or permanently affected. But even for those who were discharged early in the war the time is hardly ripe for a permanent ruling, as conditions of life have been so changeable. The difficulty is patent of maintaining anything like an absolute standard throughout the kingdom in assessing, for example, such disabilities as effort syndrome or neurasthenia where physical signs may be lacking. The medical difficulties are often increased, especially in rural districts, by the well-meaning but mistaken efforts of the Parish Representative, now to be known as the Local Distributor, to get the utmost benefit for each one of the village heroes. In this way too frequently a poor case may be bolstered up out of a sort of localised patriotism; on the other hand, the present economic situation can hardly fail to influence the judgment of the most impartial board. In heart cases especially, where the interpretation of the relation of physical signs to symptoms varies so much, a sudden change of diagnosis involving reduction of pension, though bound to create suspicion in the mind of the ex-soldier, is not necessarily unfair. It may be not the recent but the previous diagnosis that was wrong. But the opinion of the expert staff of the hospitals which the pensioners have been attending as out-patients should undoubtedly be ascertained and given due weight before reduction of pension. The neglect of this precaution has led in some cases to the expression of conflicting opinions to the patient. The feeling of distrust thus engendered is avoidable.

ACIDOSIS AND BEE-STINGS.

THE clinical note contributed to our present issue by Dr. J. O. Beven, entitled, "Acidosis" Following Bee-stings, is of particular interest. The description of the somewhat alarming symptoms which followed the attack of the rock bee and the extremely large number of actual stings inflicted are worthy of note. The rock bee appears to be a particularly deadly insect, and one is at first inclined to wonder how two of the patients escaped with their lives. The sting of the rock bee is acid in reaction, and probably this acidity is due to formic acid, as is the case with the ordinary bee. It is, however, difficult to correlate the symptoms observed with those due to an overdose of formic acid. There is no doubt that formic acid in large doses will produce symptoms of paralysis and stupor, but even with the large number of stings recorded it is difficult to realise how the formic acid could produce true "acidosis." Formic acid has so far failed to produce death, except in the case of a child who succumbed after being bitten by ants. This case was recorded by V. Maschka[1] The symptoms described by Dr. Beven in his cases are unlike those due to acidosis, but can possibly be explained on the lines of intoxication. The secreting glands of the rock bee evidently contain a toxalbumin in addition to the formic acid. The injection of such a toxalbumin in relatively large doses would have the same effect as the injection of a foreign protein—viz., shock. This animal toxin, probably protein in nature, would be capable of producing both a local and a general disturbance, the rapidity of onset of the symptoms being largely determined by the situation of the injections. Its effect would be most marked on the nervous and vascular systems, and this appears to have been the chief feature of the cases described. This animal toxin would appear to be a true toxin, since there is abundant evidence to show that a considerable degree of immunity is acquired from repeated bee-stings. In the same way as in anaphylactic shock, the symptoms produced are very alarming, but rarely prove fatal. The collapse, vomiting, diarrhœa, abdominal cramp, respiratory distress, rapid and weak pulse, and sweating are characteristic as demonstrating the effect of the toxin on smooth muscle. The rapid recovery observed is also in favour of such a view. The onset of the symptoms within 48 hours and the rapidity of the recovery would be sufficient in themselves were it not for the fact that the patients developed skin lesions such as urticaria and pruritus. This association is of particular interest, since it is a characteristic feature of the reactions following the

[1] Journal de Médecine de Bordeaux, Sept. 10th, 1920.

[1] Vrtljschr. f. ger. Med., 1881, n.f. xxxiv., 193.

introduction of foreign proteins into the animal body. The skin lesions do not appear until some days after—usually the sixth to the ninth day, and this sequence actually occurred in two of the cases. It would appear, therefore, that the symptoms observed were due chiefly to the toxic protein in the bee-stings, and that the formic acid played little, if any, part in producing the changes observed. The treatment of the condition was undoubtedly the correct one under the circumstances—viz., symptomatic treatment—and recovery is the general rule. We would refrain from assigning the condition described to true anaphylactic shock, since this is not yet clearly defined, but would rather classify it as a severe toxæmia following bee-stings.

SYPHILOMA VULVÆ.

Dr. Arthur Stein,[1] associate gynæcologist to the Harlem and Lenox Hill Hospitals, New York City, gives the following account of syphiloma vulvæ, a term which he prefers to the misleading appellation "esthiomène" or "lupus vulvæ" to describe a slowly progressive indurated tumour of the vulva due to tertiary syphilis, causing no pain and giving rise to inconvenience only through its cumbersome size. The origin of vulvar syphiloma varies greatly, but three regions are specially susceptible, being in order of frequency, the fourchette, the urethra, and the rectum. The labia minora and clitoris are usually involved in the ulcerative and hypertrophic process, and sometimes the entire vulva is deformed and altered in outline. When fully developed syphiloma vulvæ forms a more or less symmetrical enlargement of the labia majora on both sides. The clitoris is enlarged and sometimes replaced by one or more soft projections. The labia minora are not infrequently the site of ulceration on their internal aspect and free borders. The vestibule region is greatly thickened, and superficially or deeply ulcerated, the ulcers having very irregular edges and discharging a scanty and at times purulent secretion. The process may extend to the perineum and anus in the form of large or small fleshy masses and excrescences. The lesions may heal, leaving deep radiating and adherent cicatrices, but are more apt to give rise to destructive ulceration in the vulvo-vagino-anal region. Clinically the disease is characterised by its painlessness and the absence of constitutional disturbance. Treatment should consist in operative removal of the hypertrophied tissues and ulcers, followed by energetic cauterisation and combined with intensive antisyphilitic medication.

DRIED LEMON-JUICE AND ITS ANTISCORBUTIC POTENCY.

IF it can be shown that the accessory food factors can be preserved intact in the dry state, an advance in the direction of prescribing such materials in the diet in which there is reason to believe they are missing is clearly in evidence. We published a paper contributed by Surgeon Rear-Admiral P. W. Bassett-Smith, R.N., in our issue of May 22nd, in which the author described the preparation of a concentrated form of lemon-juice which, in spite of the evaporating process (in vacuo at room temperature), proved to retain its antiscorbutic properties. Recent experiments carried out by Admiral Bassett-Smith led to the interesting and important conclusions that (1) the concentrated lemon-juice will keep well in concentrated or tablet form; (2) that boiling the juice for five minutes does not appreciably diminish the antiscorbutic properties; and (3) that the potency of the antiscorbutic factor is decidedly reduced when the juice is heated for three-quarters of an hour at 58° C. These conclusions are based upon experiments made upon young guinea-pigs. The results are of obvious importance as leading to the realisation of a solid food accessory outfit available to travellers at a long distance from base supplies. We do not quite understand why in the manufacture of citric acid the accessory factors are not conserved in the residual fluid. Citric acid is prepared on simple lines from lemon-juice. The juice is treated with chalk, when practically insoluble citrate of lime is formed. This is easily separated from the magma by a well-known process, but the magma contains the antiscorbutic factors, and it seems to us that attention should be turned to the concentration and drying of this magma. The result would then appear to be the recovery of citric acid for well-known commercial and medicinal purposes and the conservation of the antiscorbutic factors which are not required to be associated with the acid, so far as investigations have shown. The use of milk-sugar as an absorbent to put the factors into a dried form would still obtain.

[1] Surgery, Gynecology, and Obstetrics, September, 1920.

NEW MUSEUM SPECIMENS AT THE ROYAL COLLEGE OF SURGEONS.

FOR many years the exhibition of specimens recently added to the Museum of the Royal College of Surgeons of England has been an event of some importance. In olden days, when hundreds of Members of the College came on a Thursday in July to elect new members to the Council, they found the riches collected by the officials of the Museum during the previous 12 months assembled in the Council room for their delectation. Now that voting can be effected by post and the election demands the presence of only some half a dozen Fellows, the Council of the College has wisely arranged to place the latest additions to the Museum on exhibition at a more convenient period and for a longer space of time. The break caused by the war, when the Museum staff—such as remained on duty—was fully engaged in preparing for the Royal Army Medical Corps the great collection now exhibited in the Museum, has given the Council of the College an opportunity of effecting a welcome change as to the date and manner of exhibition. The recently added specimens are now to be placed on exhibition in a special part of the Museum during the autumn term, and for the present year are open to inspection by all medical men and medical students from Monday, Oct. 18th, until Saturday, Nov. 15th. During the past six years, although the energies of the staff have been mostly taken up in preparing war specimens, yet many objects of great interest to surgeons, physicians, and biologists were received and preserved. A large number of these have now been dissected and are placed on exhibition, all of them showing the finished technique which has become traditional in the Museum founded by John Hunter. The exhibition is open to all medical men and students of medicine, as is also the War Office collection of medical specimens.

SERVITUDE OR INDEPENDENCE.

THESE words have frequently been heard in the discussions between South Wales miners and the British Medical Association in regard to contract practice in colliery districts. In a recent address to a branch meeting of the Association Dr. Alfred Cox, the medical secretary, urged the view that the official policy of the Association was making for independence rather than servitude, maintaining that the fight put up by the Association on behalf of the practitioners in colliery practice in South Wales was directed against a policy which would make the miners' doctor the "wage-slave" of the workmen. Before taking up this position we have to be certain of two things: (1) Were the terms of the miners unfair, and especially, was money due to the practitioners diverted to needless organisation or lay salaries? (2) Is there no reason for the belief that we have here an attempt to secure an efficient service of a more comprehensive kind? For that last is the broad object of the Ministry of Health, so that it is all important to encourage any attempts on the part of the medical profession or of the public to organise complete services. However experimental these may be, they will yet be useful in the

experience they yield of the difficulties and dangers arising when the best of theories are put into practice. It may be recalled that a welfare department was found necessary to the Ministry of Munitions when the safety of the nation appeared to depend on the greatest standard of efficiency among shell-makers and fillers. The Blue-book, issued as a result of the experience then gained is full of valuable data on the conditions necessary for the proper welfare and efficiency of the workers. Is not such work as important to the life of the nation in peace time, and is it not an essential part of the industrial medicine which is to form an integral part of professional work in the future? Now it does appear that the miners are making a distinct effort in the direction of securing the "welfare" of their workers; if this be true it is important that there should not be interference with a provident scheme. For many years past arrangements have existed in some colliery practices whereby the whole organisation, financial and otherwise, rests in the hands of a combined committee of owners, miners, and doctors, a true Whitley council, and in these circumstances the best of good feeling has, we learn, existed. On the other hand, should the committee responsible for the whole of the medical arrangements in an area consist entirely of subscribers, without representation of employers and professional men, then there would be danger of arbitrary dealing, to use no stronger term. Professional men should be independent in professional matters, but for a successful service, in the sense of adequate provision for the needs of the public, close coöperation is the desirable condition. If worked under joint committees such local schemes could be made satisfactory to everyone concerned, and where the scheme includes coöperative surgeries and "primary centres" with proper hospital provision the development is surely along accepted lines. Presumably the management of the scheme will ultimately be taken over by local authorities, to form an integral part of a complete service. The question of a salaried service as against free choice is a knotty one, and its solution largely depends upon the view taken of incentive. The questions arise: Is the professional man now giving his most efficient service under the stimulus of a steadily increasing practice? Are the conditions under which his work is now done the best possible guarantees for a high standard? Do financial considerations induce him to undertake the expenditure necessary for the maintenance of his efficiency? On the answer to these questions depends the future of medical practice in colliery districts.

WHITE BILE IN BILIARY STASIS.

LIGATION experiments in dogs, cats, and monkeys show that under conditions of stasis the gall-bladder and bile-ducts act very differently. The gall-bladder, continuing to exercise normal functions, effects a great concentration of the stasis bile, and adds mucus thereto in quantity. As a result, if an obstruction is produced below the entrance of the cystic duct, all of the extra lobular biliary channels come at length to be filled with a thick greenish-black fluid. The ducts, on the other hand, have no concentrating faculty, and their lining secretes but little mucus. In an obstructed duct system blocked off from the gall-bladder, or connected with one so changed as to be incapable of functioning, there regularly accumulates a limpid watery fluid devoid of pigment and bile-salts, even when the animal is heavily jaundiced—the "white bile" of the surgeon. The passages soon become so distended with it that true bile ceases to enter them. These facts are recorded by P. Rous and P. D. McMaster, of the Rockefeller Institute, and seem to point to cholecystectomy as a wise measure in gall-stone cases, especially when the gall-bladder is but little damaged. For an abnormal concentration and thickening of the bile, such as the gall-bladder can effect, must act both to promote the formation of stones and to render obstruction by them more complete. The frequent rapid increase of stones partially obstructing the common duct is attributable to the concentration of stasis bile by the gall-bladder.

LONDON R.F.H. SCHOOL OF MEDICINE FOR WOMEN.

AN INTERESTING LUNCHEON.

ON Tuesday afternoon, at Fishmongers' Hall, a luncheon was given by 100 representative women to 100 representative men in support of a projected appeal for the Royal Free Hospital and its associated medical school, the London School of Medicine for Women. The function commemorated the near approach of the jubilee of the Royal Free Hospital, and marked the fact that more than 50 years had elapsed since women first found a place in the medical profession. Sir ALAN GARRETT ANDERSON, honorary treasurer of the London R.F.H. School of Medicine for Women, and son of the late Dr. Elizabeth Garrett Anderson, presided. Princess Louise Duchess of Argyll was present, and among the hostesses and guests were the following:—

HOSTESSES.

Miss Aldrich-Blake, M.S., M.D. (Dean of the London School of Medicine for Women); Lady Ampthill; Miss Adelaide Anderson; Miss Louisa Garrett Anderson, M.D.; Miss Lena Ashwell; Mrs. Ayrton.

Miss Lilian Barker; Lady Barrett, M.S., M.D.; Miss Billington; Lady Bland-Sutton; Miss Marjorie Bowen; Miss Lilian Braithwaite; Miss Brodie-Hall; Miss A. M. Browne, L.S.A.; Miss Margaret Buchanan; Viscountess Burnham; Dame Clara Butt.

Miss Chadburn, M.D.; Miss Clough; Miss Constance Cochrane; Miss Cox-Davies (Matron of the Royal Free Hospital); the Marchioness of Crewe; Professor Winifred Cullis; Countess Curzon of Kedleston.

Mrs. Despard; Miss Durham.

The Lady Emmott; Miss Lloyd Evans.

Mrs. Fawcett; Mrs. Bedford Fenwick; Lady Firth.

Miss A. Garrett; Mrs. Ogilvie Gordon; the Countess of Gosford; Miss Alice Gregory.

Lady Hall (King Edward's Hospital Fund); Mrs. Handley-Read, M.R.C.S., L.R.C.P.; Lady St. Helier; Miss Hopwood; Mrs. Hoster; Lady Hulton.

Mrs. H. B. Irving; Miss Frances Ivens, M.S.

The Dowager Countess of Jersey; Miss H. Jex-Blake; Miss K. L. Johnston.

Mrs. Lucas Keene, M.D.; Mrs. Mark Kerr; Mrs. Laura Knight.

The Hon. Lady Lawley; the Hon. M. A. Lawrence; Dame Lloyd-George; Miss Lloyd-Still.

Mrs. Lyon Massey; Miss Mary Macarthur; Miss Lillah Macarthy; Miss Rose Macaulay; Mrs. MacLean, D.Sc.; Lady Marling; Miss Louisa Martindale, M.D.; Lady Meyer; the Countess of Minto; the Hon. Mrs. E. Montagu; Miss Flora Murray, M.D.

Miss Olga Nethersole; Viscountess Northcliffe; the Lady Northcote.

Miss Rosalind Paget; Mrs. Peel; Mrs. Theodore Pennell, M.D.; Lady Perley; Mrs. Perrin; Mrs. Picton-Turbervill.

Mme. Teresa Del Riego; Viscountess Rhondda; Miss Lucy Robinson; Mrs. Scoresby Routledge.

Mrs. Vaughan Sawyer, M.D.; Mrs. Scharlieb (President of the London School of Medicine for Women); Dr. C. Henrietta Shearer; Dr. Amy Sheppard; Miss May Sinclair; Miss Beadsmore Smith; Mrs. Stanley; Miss Florence Stoney; Lady Strachey; the Duchess of Sutherland.

Mrs. Tata; Miss May Thorne, M.D.; Miss Jane Turnbull, M.D.

Miss Jane Walker, M.D. (Medical Women's Federation).

GUESTS.

Sir Alan Garrett Anderson, K.B.E. (Hon. Treas., London (R.F.H.) School of Medicine for Women); H.R.H. Princess Louise Duchess of Argyll; Right Hon. Christopher Addison, M.D., M.P. (Minister of Health); Right Hon. F. D. Acland, M.P. (Chairman, London (R.F.H.) School of Medicine for Women.

Sir Francis Layland Barratt, Bt. (Hon. Treasurer, Royal Free Hospital); Sir William Beveridge (Director, School of Economics); Sir John Bland-Sutton (President of the Royal Society of Medicine); Sydney Boulton (Chairman of Lloyd's); Sir Anthony Bowlby (President, Royal College of Surgeons); Sir Napier Burnett (Director of Hospital Services, Joint Council of Red Cross and St. John); Viscount Burnham; Sir E. Busk (Chairman of Convocation, University of London).

Dr. Harry Campbell; Sir Francis Champneys (Chairman of Central Midwives Board); George Clausen, R.A.; Right Hon. J. E. Clynes, M.P. (President, National Union of General Workers); Sir Frank Colyer; Right Hon. Sir E. E. Cooper (the Lord Mayor); W. L. Courtney, LL.D.; Philip Franklin, F.R.C.S. (Honorary Secretary, American Hospital in London).

Right Hon. Sir Eric Geddes (Minister of Transport); Sir John Goodwin (Director-General of A.M.S.); H. A. Gwynne.

Professor F. J. C. Hearnshaw; Sir H. Frank Heath; Sir Wilmot Herringham (Chairman of the Universities Grants Committee of H.M. Treasury); Brigadier-General Horwood (Commissioner of Police of the Metropolis); Sir Robert Hudson (Chairman of the British Red Cross Society and the Order of St. John).

Admiral Mark Kerr.

Alfred Langton (Chairman, Royal Free Hospital); Sir John Lavery, A.R.A.; Dr. R. T. Leiper; Earl of Lytton.

Sir Nevil Macready; Sir Alfred Mond (Office of Works).

Sir George Newman (Chief Medical Officer, Board of Education and Ministry of Health).

Sir Cooper Perry (Principal, London University).

Lord Riddell; Sir Ronald Ross.

Sir Owen Seaman; the Earl of Selborne, K.G.; Right Hon. E. Shortt (Home Secretary); Professor J. R. Simpson; Lord Somerleyton; Dr. Squire Sprigge; Hon. Sir Arthur Stanley (Chairman of Joint Council of the British Red Cross Society and Order of St. John of Jerusalem in England).

Sir J. J. Thomson, O.M. (President of the Royal Society); Sir William Tilden; Sir J. Wrench Towse (Clerk to the Fishmongers' Company).

α Sir Cuthbert Wallace; Hugh Walpole.

β Major-General Sir Thomas Yarr.

The health of the King as "Our Most Illustrious Doctor" having been drunk with acclamation, Dame Clara Butt sang the National Anthem.

Messages of congratulation upon the occasion having been read from Queen Mary and Queen Alexandra, Dr. May Thorne read the text of the address in reply.

In support of the toast "The London R.F.H. School of Medicine for Women," the CHAIRMAN reviewed the struggles which the pioneer medical women had some half a century ago, when his mother, the first English woman to obtain a medical qualification, had to pass her examination sometimes in English and sometimes in French, and to overcome every sort of obstacle. He pointed out that the Royal Free Hospital, when at last corporations and universities would provide women with qualifications, had given the opportunity of founding a school of medicine in London with the proper clinical accompaniment of hospital practice, and pleaded that this fact commended the institution to the support of all, now the value of women in the profession of medicine was undisputed. He was not, he said, asking for subscriptions at the moment, but he indicated that much pecuniary support would be required during the next ten years to carry out two essential schemes. The first of these was the provision of adequate salaries and scientific plant for the medical school; the second was the extension of the hospital planned before the war. At least 100 more beds were needed if the institution were to minister to the needs of the population and supply the clinical opportunities for the students. The necessary and adjacent site, he said, had already been given to the hospital. He concluded by saying that the school had grown from 175 in 1913 to 500 in 1920, and that the hospital was the only one where the supreme honour of election to the senior staff was open to women.

Mrs. SCHARLIEB, replying to the toast, spoke of the immense debt which all medical women owed to the hospital, and made special allusion to the splendid work their graduates had done abroad, and notably in India.

Lady BARRETT briefly proposed "The Guests," coupling the toast with the name of Sir Owen Seaman.

The toast of "The Chairman" was given in eloquent and witty terms by Professor WINIFRED CULLIS.

The luncheon was a great success, and the thanks of the organising committee of hostesses and of the guests are due to the Prime Warden and to the Court of the Worshipful Company of Fishmongers for the loan of their Hall.

HOUSING NOTES.

The Ministry Reports.

THE first report of the Ministry of Health shows that only 312 out of 1865 local authorities have taken no steps in regard to housing and town planning. Many of these authorities are in districts where no new houses are needed. It is estimated that the country is behind hand by over 800,000 working-class houses. The importation of timber houses from abroad is not recommended. This is not due to a dislike of such houses, but because the wood may be more easily shipped before it is cut up and made into sections. The main hindrance to progress, according to this report, would seem to be the shortage of labour. No solution had been found acceptable to the unions and to the Government. Very few houses are being converted into flats. The expense of making convenient flats is usually prohibitive. The Ministry is not without its critics. Some of these are a little sore as a result of autocratic handling, and it is to be feared that the power of the purse is liable to make many officials difficult. But walls at last are rising, if slowly and at a cost. Last month the Glasgow Corporation accepted a £2,000,000 tender from a local contractor for the erection of over 1500 houses on a site on the south-western fringe of the city.

The Shortage of Builders.

Dr. H. Scurfield, medical officer of health for Sheffield, gave a very practical address on the urgency of the housing question, at the Doncaster sessional meeting of the Royal Sanitary Institute, on Oct. 15th. He pointed out that in Sheffield during the year 1919 there were 4947 marriages and the excess of births over deaths during the year ended Sept. 30th, 1920, was 7264. But Sheffield Corporation, although ahead of most other municipalities, had completed only 206 houses up to Oct. 7th, 1920, while other 606 were still in hand. The total of new houses certified by the building surveyor from Nov. 1st, 1918, to Oct. 11th, 1920, was 239. In Sheffield it had been estimated that about 20,000, most of them back-to-back, houses were in need of condemnation, and that 15,000 houses should be built by the municipality during the next five years.

He gave the number of dwelling houses certified for human habitation in Sheffield during the last 25 years as:—

1886...725	1893... 822	1900...2876	1907...1753	1914...570
1887...928	1894... 632	1901...2118	1908...1778	1915...399
1888...806	1895... 523	1902...1977	1909...1469	1916...397
1889...830	1896...1059	1903...2051	1910...1243	1917... 57
1890...903	1897...1443	1904...1963	1911... 866	1918... 8
1891...692	1898...2273	1905...1982	1912... 703	1919... 66
1892...786	1899...2650	1906...1904	1913... 542	

And he summarises the position of housing schemes in the country at large on the last day of July, 1920, as follows:—

—	Houses approved.	Direct labour sanction.	Houses commenced.	Houses completed.
London County Council	7,684	—	752	84
Liverpool	10.679	500	750	54
Manchester	5,276	500	380	40
Birmingham	5,382	500	816	181
Bedford	8	410	4	—
Hull	1,372	250	64	—
Halifax	358	62	36	—
Bristol	4,870	50	356	24
Newcastle	1,579	—	189	—
Leeds	2,306	—	407	11
Wolverhampton	1,713	—	232	48
Bradford	1,124	—	102	6
Rotherham	836	—	118	8
Sheffield	2,181	—	733	126

Shortage of labour was, of course, the critical difficulty, and Dr. Scurfield went on to suggest points which occurred to him with regard to the training of building operatives.

1. Owing to the enormous need for new buildings the Government ought to have no difficulty in giving a guarantee of continuous employment to the members of the building trades during the next generation.

2. Although an apprenticeship to the building trades nominally lasts five years, from 16 to 21, there is no test of craftsmanship at the end of it. The present seems to be a convenient time to substitute a period of training beginning at any reasonable age and terminating with a test of craftsmanship for the present anomalous system. The building trades of the country might be asked to frame training regulations and tests, as has already been done in the case of the legal, medical, and dental professions.

3. It is stated that there are a large number of demobilised men unemployed and waiting to be trained, and that the Government is willing to train them.

The great necessity of the moment was, Dr. Scurfield thought, the training of adult apprentices. There was no physiological reason why a man, aged 21, should not become in a few years, if he was given the training and experience, as efficient a bricklayer as the boy of 16. Since Dr. Scurfield spoke, the Prime Minister has this week stated the Government's intention to employ ex-Service men on building, whatever objection the building trades might make.

Evolution of the Building Industry.

The building industry contains an unusual proportion of idealists, both among employers and employed. A special committee will report next month to the Industrial Council, and, according to the *Manchester Guardian* for Oct. 4th, will recommend drastic changes in the machinery of the industry. The idea of "social service" is to replace that of "profit" as the incentive to labour. The fear of unemployment which is resulting in a serious restriction of output is also to be removed. There is to be no more profiteering, for the necessary capital will be paid for at a fixed rate of interest, and the industry will be democratically controlled for the benefit of all its members. The proposals resemble those of the guild Socialists.

The Liverpool Tuberculosis Conference.

Several speakers touched on the housing question during the recent Conference of the National Association for the Prevention of Tuberculosis. Dr. Hyslop Thompson said that under present housing conditions it was impossible to carry out satisfactory domiciliary treatment. "Even now that new houses are being erected," he said, "insufficient consideration is being given to the requirements of the tuberculous patient and to the prevention of disease." At the same Conference it was stated—in Dr. E. W. Hope's paper—that in certain insanitary areas in Liverpool occupied by some 10,000 people the mortality from phthisis had been as high as 4 per 1000. When the same areas were reconstructed the phthisis-rate fell, and over a period of five or six years the annual average was now 1·9 per 1000.

The New Law of Rent Restriction.

Medical officers of health will do well to familiarise themselves thoroughly with the provisions of the new Act which became law on July 2nd. A limited freedom is given to landlords to raise their rents, but in return for exercising this privilege the landlord is bound to keep his property "reasonably fit for habitation." If after three months of increased rent the house is not in a reasonable state of repair the county court has power to suspend payment of the increase. Application to the court may be made either by the tenant or by the sanitary authority. Any agreement made by the tenant since August 4th, 1914, to repair the property himself is automatically rendered of no effect when the increased rent is paid.

THE LONDON MEDICAL EXHIBITION:

A REVIEW OF THE EXHIBITS.

(*Concluded from p. 818.*)

II. DRUGS.

THE interest taken in this section was founded largely on the fact that so many of the exhibits were illustrations of the skill and enterprise of home manufacturers. There may still remain the question of economic production and a competence to meet successfully with importations, but of the purity and excellence of the products there was ample evidence.

What can be done in this direction was well exemplified at the stall of Messrs. Howards and Sons, Ltd., of Ilford and Stratford. Here were shown specimens of agotan, which succeeds atophan, a compound of phenylchinolin and carbonic acid, which has gained some reputation in eliminating uric acid from the organism in gout and rheumatic affections. There were besides shown a standard ether, aspirin, quinine and its many derivatives, all products of a high standard of output. Fine chemicals were a feature of the striking exhibit of the Boots Pure Drug Company, Ltd., of Nottingham. Here again were synthetics replacing supplies hitherto exclusively obtained from abroad. In addition there were a series of interesting pharmaceutical products showing elegance of preparation. The salicylates formed a feature of the exhibit of Messrs. Menley and James, of 64, Hatton Garden, London, and the related compounds, the benzoates. Iodex was included in the exhibits, a preparation forming a means of administering iodine in an oily basis effecting absorption without staining the parts to which it is applied. Organo-therapeutic products in tabloid form gave prominence to the exhibits of Messrs. Burroughs, Wellcome, and Co., of Snow Hill Buildings, London. Examples occurred in the tabloids of thyroid and pituitary gland. In addition they exhibited specimens of their organic arsenic products, kharsivan and neokharsivan, prepared in their own factories after exhaustive research work on lines of certainty as to composition and pharmacological action.

Interest is rapidly being concentrated in colloidal methods of treatment. Examples of drugs in an assured colloidal state were exhibited at the stall of the British Colloids, Ltd., 22, Chenies-street, Tottenham Court-road, London, including sulphur, iodine, silver, manganese, and other colloidal preparations described as "collosols." Messrs. May and Baker, of Battersea, London, put forward a selection of pharmaceutical preparations, including the organic arsenic compounds used in the treatment of syphilis, calomel cream, and so forth, while close by Messrs. Hedley and Co., of 120, Harrow-road, Leytonstone, exhibited as their chief product, ethyl chloride, and this firm makes the interesting announcement that during the war enough ethyl chloride was supplied for performing 2 million operations. Included in this exhibit were the solutions of a selection of medicaments in ethyl chloride, the rapid volatilisation of which leaves a film of the agent as an application in dermatological practice. The Anglo-American Oil Company, Ltd., of Minerva House, Bevis Marks, London, claimed special advantages for their paraffinum liquidum as an intestinal lubricant. We have reported upon this product in our analytical columns and were able to substantiate the statements that nujol, as the oil is called, shows a satisfactory standard of viscosity and is colourless, tasteless, and odourless. Similarly, we have noticed in our analytical columns the pharmaceutical products of the Hoffmann-La Roche Chemical Works, Ltd., of 7 and 8, Idol-lane, London. Besides digalen, a solution of amorphous digitoxin claimed to possess the advantages of digitalis without its drawbacks, there was exhibited "omnopon," a solution of the total alkaloids of opium. The Anglo-French Drug Company, Ltd., of 238, Gray's Inn-road, presented a number of drugs in use therapeutically, including galyl, cuprase, and stannoxyl. The stall of Messrs. Parke, Davis, and Co., of 50–54, Beak-street, London, was devoted mostly to the exhibition of glandular preparations and vaccines.

Excellent examples of the attention which has been given to the purification of petroleum for medicinal purposes were exhibited by the Wm. Browning Company, Ltd., of Park-street, London. The exhibit included a well-prepared petroleum emulsion known as semprolin, which we have referred to in our analytical columns. Genatosan, Ltd., of 12, Chenies-street, London, brought forward, amongst other things, their special brand of aspirin (genasprin) and a series of detoxicated vaccines. The preparations exhibited by Messrs. C. J. Hewlett and Son, Ltd., of Charlotte-street and Curtain-road, London, were good examples of advanced pharmaceutical products. Their pepsinæ co. c. bismutho is in particular well-known and evidences skill in the combining of active constituents which are very serviceable in common forms of gastric disturbance.

III. SPECIAL FOODS.

Special foods were not much in evidence, and there was only one instance of an attempt to offer a preparation reinforced with accessory food factors. Under the name of vitmar Messrs. Callard and Co., of 74, Regent-street, London, claim for this product not only high nutritious value, but that it contains fat soluble A, water soluble B, and water soluble C. The claim is justified, having regard to the materials employed in preparation. "Glaxo," of 155, Great Portland-street, London, showed an example of a successful dried milk process, these manufacturers now placing on the market three forms—viz., full cream, three-quarter cream, and half cream, leaving a choice to the practitioner when dealing with the question of the diet suitable for special cases.

IV. PUBLICATIONS.

There was much interest shown in this section judging from the number of visitors taking down the new medical publications from the shelves and making a rapid review of the pages. Amongst the publishers exhibiting were: Mr. E. A. Brooke-Williams, of 81, St. George's-road, London; Messrs. Baillière, Tindall, and Cox, of 8, Henrietta-street, Covent Garden, London; Messrs. H. K. Lewis, of 136, Gower-street, London; Mr. Stanley Phillips, of 45, Brondesbury-road, London; Mr. Henry Kimpton, of 263, High Holborn, London; the J. B. Lippincott Company, of 16, John-street, Adelphi, London; and Mr. William Heinemann, of 20, Bedford-street, London. The subjects of radiology and venereal disease claimed many volumes.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1920.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 11·3 per 1000 of the population, estimated at 4,358,309 persons; in the three preceding months the rates had been 6·0, 6·5, and 6·6 per 1000. Among the metropolitan boroughs the lowest rates from these diseases were recorded in Paddington, Kensington, Chelsea, Hampstead, the City of London, and Lewisham; and the highest in Finsbury, Bethnal Green, Stepney, Poplar, and Bermondsey. The prevalence of scarlet fever showed a marked increase—84 per cent.—over the preceding month; this disease was proportionally most prevalent in Finsbury, Bethnal Green, Stepney, Poplar, and Bermondsey. The Metropolitan Asylums Hospitals contained 3683 scarlet fever patients at the end of the month, against 1674, 1940, and 2251 at the end of the three preceding months; the weekly admissions averaged 603, against 251, 284, and 335 in the three preceding months. Diphtheria also showed a marked increase in prevalence—nearly 60 per cent.—over the month of August; the greatest prevalence of this disease was recorded in St. Pancras, Islington, Hackney, Shoreditch, Bethnal Green, and Poplar. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1590, 1470, and 1388 at the end of the three preceding months, rose to 1773 at the end of September; the weekly admissions averaged 266, against 189, 179, and 173 in the three preceding months. The prevalence of enteric fever was about equal to that in the preceding month; of the 35 cases notified during the five weeks ended Oct. 2nd, 3 belonged to each of the boroughs of Fulham, Shoreditch, Stepney, Poplar, and Greenwich. There were 14 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 19, 24, and 17 at the end of the three preceding months; the weekly admissions averaged 3, against 3, 6, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Holborn, Finsbury, Shoreditch, Bethnal Green, Southwark, and Deptford. The 40 cases of puerperal fever notified during the month included 7 in Deptford, 3 in Paddington, 3 in Fulham, and 3 in Wandsworth. The 15 cases of cerebro-spinal meningitis included 2 in the City of Westminster and 2 in Wandsworth; while of the 11 cases of poliomyelitis, 4 belonged to Islington and 2 to Hammersmith.

The mortality statistics in the table relate to the deaths of civilians actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ended Oct. 2nd the deaths of 4147 London residents were registered, equal to an annual rate of 9·9 per 1000; in the three preceding months the rates had been 10·3, 9·6, and 9·3 per 1000. The death-rates ranged from 7·7 in Wandsworth, 7·8 in Hampstead, 8·2 in Woolwich, 8·8 in Lewisham, 9·0 in Greenwich, and 9·1 in Hammersmith and in Bermondsey, to 11·3 in the City of London, in Poplar, and in Deptford, 11·7 in Chelsea, 11·9 in Finsbury, 12·0 in Battersea, and 13·4 in Holborn. The 4147 deaths from all causes included 324 which were referred to the principal infectious diseases; of these, 11 resulted from measles, 21 from scarlet fever, 82 from diphtheria, 12 from whooping-cough, 4 from enteric fever, and 195 from diarrhœa and enteritis among children

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1920.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1919.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,358,309**	—	**3047**	**1338**	—	**35**	**1**	**40**	**248**	**15**	**11**	**4735**	**11·3**	—	**11**	**21**	**82**	**12**	**4**	**195**	**325**	**0·8**	**4147**	**9·9**
West Districts:																								
Paddington	143,938	—	59	22	—	2	—	3	5	—	—	91	6·6	—	—	—	1	1	—	9	11	0·8	138	10·0
Kensington	157,886	—	60	23	—	1	—	—	6	—	—	90	5·9	—	—	—	—	—	—	12	12	0·8	155	10·2
Hammersmith	130,981	—	104	31	—	1	—	1	3	1	2	143	11·4	—	—	—	4	—	1	4	9	0·7	114	9·1
Fulham	152,543	—	106	35	—	3	—	3	8	1	1	157	10·7	—	—	2	5	—	1	7	15	1·0	136	9·3
Chelsea	60,573	—	13	15	—	—	—	—	1	—	—	29	5·0	—	1	—	1	—	—	2	4	0·7	68	11·7
City of Westminst'r	127,533	—	42	32	—	—	1	2	5	2	—	84	6·9	—	—	—	1	—	—	5	6	0·5	117	9·6
North Districts:																								
St. Marylebone	97,953	—	62	12	—	2	—	2	7	—	—	85	9·0	—	—	—	1	1	—	4	6	0·6	100	10·6
Hampstead	88,012	—	15	22*	—	2	—	—	—	1	—	40	4·7	—	—	—	1	—	—	—	1	0·1	66	7·8
St. Pancras	219,434	—	80	92	—	2	—	1	14	1	—	190	9·0	—	1	1	6	—	—	5	13	0·6	202	9·6
Islington	323,034	—	191	153	—	1	—	1	18	—	4	368	11·9	—	—	1	18	—	—	4	23	0·7	323	10·4
Stoke Newington	50,954	—	23	12	—	—	—	—	2	1	1	39	8·0	—	—	—	1	—	—	3	4	0·8	52	10·6
Hackney	216,736	—	152	85	—	—	—	2	12	—	—	251	12·1	—	—	—	2	1	—	12	15	0·7	202	9·7
Central Districts:																								
Holborn	38,156	—	17	5	—	1	—	—	4	—	1	28	7·7	—	—	—	—	—	—	1	1	0·3	49	13·4
Finsbury	75,291	—	76	22	—	—	—	—	8	1	1	108	15·0	—	—	—	—	2	—	3	5	0·7	86	11·9
City of London	13,893	—	6	1	—	—	—	—	1	—	—	8	6·0	—	—	—	—	—	—	—	—	—	15	11·3
East Districts:																								
Shoreditch	98,134	—	67	39	—	3	—	2	8	—	—	119	12·6	—	—	—	2	1	—	15	18	1·9	100	10·6
Bethnal Green	110,085	—	158	68	—	—	—	2	20	1	1	250	23·7	—	3	3	—	—	—	7	13	1·2	116	11·0
Stepney	232,506	—	489	69	—	3	—	—	15	—	—	576	25·8	—	1	3	5	1	—	17	27	1·2	245	11·0
Poplar	153,644	—	211	104	—	3	—	—	9	—	—	327	22·2	—	1	3	7	1	—	6	18	1·2	167	11·3
South Districts:																								
Southwark	179,971	—	128	26	—	2	—	2	14	1	—	173	10·0	—	—	1	2	1	—	8	12	0·7	192	11·1
Bermondsey	124,239	—	225	32	—	1	—	2	4	1	—	265	22·2	—	—	2	3	1	—	5	11	0·9	108	9·1
Lambeth	282,322	—	135	85	—	1	—	2	9	—	—	232	8·6	—	3	4	9	1	—	9	26	1·0	263	9·7
Battersea	159,316	—	98	47	—	1	—	2	10	—	—	158	10·3	—	—	—	3	—	—	13	16	1·0	183	12·0
Wandsworth	333,693	—	123	84	—	1	—	3	16	2	—	229	7·2	—	—	1	4	—	1	10	16	0·5	245	7·7
Camberwell	273,802	—	176	101	—	2	—	—	13	1	—	293	11·2	—	—	—	—	1	—	16	17	0·6	252	9·6
Deptford	111,205	—	63	32	—	—	—	7	15	—	—	117	11·0	—	1	—	1	—	—	9	11	1·0	120	11·3
Greenwich	98,484	—	78	19	—	3	—	1	7	—	—	108	11·4	—	—	—	2	—	1	3	6	0·6	85	9·0
Lewisham	107,754	—	43	26	—	—	—	—	6	—	—	75	4·7	—	—	—	2	—	—	4	6	0·4	141	8·8
Woolwich	136,237	—	47	44	—	—	—	2	8	1	—	102	7·8	—	—	—	1	—	—	2	3	0·2	107	8·2
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

under 2 years of age. No death from any of these diseases was recorded in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, Hampstead, Holborn, Wandsworth, Lewisham, and Woolwich; and the highest in Shoreditch, Bethnal Green, Stepney, and Poplar. The 11 deaths from measles were 20 below the average number in the corresponding period of the five preceding years; of these 3 belonged to Bethnal Green and 3 to Lambeth. The 21 fatal cases of scarlet fever exceeded the average by 10; of these 4 belonged to Lambeth, and 3 each to Bethnal Green, Stepney, and Poplar. The 82 deaths from diphtheria were 40 above the average number; the greatest proportional mortality from this disease occurred in Hammersmith, Fulham, St. Pancras, Islington, Poplar, and Lambeth. The 12 fatal cases of whooping-cough were 31 fewer than the average; of these, 2 belonged to Finsbury. Four deaths from enteric fever were registered during the month, against an average of 8. The 195 fatal cases of infantile diarrhœa showed a decline of 319 from the average; the greatest proportional mortality from this disease occurred in Paddington, Kensington, Shoreditch, Bethnal Green, Stepney, Battersea, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during September from these principal infectious diseases was 50 per cent. below the average in the corresponding period of the five preceding years.

(Week ended Oct. 16th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 10·7, 11·0, and 10·9 in the three preceding weeks, further fell to 10·7 last week. In London, with a population of nearly 4½ million persons, the annual death-rate was 9·8, or 0·7 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 4·4 in Wimbledon, 4·5 in Enfield, 4·7 in Bootle, and 5·4 in Cambridge, to 15·6 in Gillingham, 16·3 in Bury, 16·9 in Preston, and 20·7 in Dewsbury. The principal epidemic diseases caused 313 deaths, which corresponded to a rate of 0·9 per 1000, and comprised 207 from infantile diarrhœa, 55 from diphtheria, 17 from measles, 16 from whooping-cough, 15 from scarlet fever, and 3 from enteric fever. The deaths from diarrhœa, which had been 205, 208, and 226 in the three preceding weeks, fell to 207 last week, and included 35 in London, 21 in Liverpool, 20 in Sheffield, 10 in Manchester, and 9 each in Hull and in Middlesbrough. There were 4534 cases of scarlet fever and 1975 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4121 and 1884 respectively at the end of the previous week. The causes of 20 of the 3670 deaths in the 96 towns were uncertified, of which 3 were registered in Birmingham and 2 in Preston.

Scottish Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 12·4, 12·1, and 12·8 in the three preceding weeks, fell to 11·5 per 1000. The 281 deaths in Glasgow corresponded to an annual rate of 13·2 per 1000, and included 11 from infantile diarrhœa, 2 from whooping-cough, and 1 each from enteric fever, small-pox, measles, and diphtheria. The 63 deaths in Edinburgh were equal to a rate of 9·6 per 1000, and included 1 from scarlet fever.

Irish Towns.—The 125 deaths in Dublin corresponded to an annual rate of 15·7 per 1000, and included 19 from infantile diarrhœa, 2 from whooping-cough, and 2 from diphtheria. The 102 deaths in Belfast were equal to a rate of 12·9 per 1000, and included 2 from infantile diarrhœa, 2 from scarlet fever, and 1 from enteric fever.

The Services.

NEW RATES OF PAY FOR THE ROYAL ARMY MEDICAL CORPS.

THE following new daily rates of pay, which have already appeared in our columns, are announced for officers of the Army Medical Service and the R.A.M.C., with effect from April 1st, 1920: Major-General, £4 15*s.*; Captain, £1 7*s.*; Captain (after six years' total service), £1 8*s.*; Captain (after ten years' total service), £1 11*s.*; and Lieutenant, £1 2*s.* The rates for Colonels, Lieutenant-Colonels, and Majors are unchanged.

It is further announced in regard to retired pay that the "service element" will be at the rate of £15 for each completed year of service in the case of officers of the Army Medical Service and the R.A.M.C., instead of at the rate of £150 for the first 15 years' service and £15 for each subsequent year. The rate of "rank element" and the maximum rates of retired pay admissible for each rank remain unchanged.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Sub.-Lieut. G. G. Newman (late R.N.) has been granted a permanent commission as Surgeon-Lieutenant R.N.

ARMY MEDICAL SERVICE.

Temp. Col. Sir W. Taylor relinquishes his commission and retains the rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. S. O. Hall retires on retired pay.

F. L. Vaux, late Lieut.-Col. Can. A.M.C., to be temporary Lieutenant-Colonel.

Major T. F. Ritchie retires on retired pay and is granted the rank of Lieutenant-Colonel.

Temp. Major J. Turton (Col., T.F. Res., A.M.S.) relinquishes his temporary commission.

Capt. J. M. Weddell relinquishes the acting rank of Major.

Temporary Captains relinquishing the acting rank of Major: A. W. Uloth, A. C. Sturrock, J. T. McCullagh.

Late temporary Captains to be temporary Captains: T. B. A. Haggard, C. G. Monro, J. G. Castellian, S. P. Hyam.

Temp. Lieut. W. F. Gardener to be temporary Captain.

Capt. G. K. Fulton, late R.A.M.C., Spec. Res., to be Lieutenant and to be temporary Captain.

S. E. Price and J. W. H. Steil to be temporary Lieutenant.

Officers relinquishing their commissions:—Temp. Major F. A. A. Holmden (retains the rank of Major). Temp. Capt. H. S. Laird is granted the rank of Major. Temporary Captains retaining the rank of Captain: A. C. Freeth, J. Elliott, R. M. Hume.

SPECIAL RESERVE OF OFFICERS.

Capt. O. Williams relinquishes the acting rank of Major.

The undermentioned Captains relinquish their commissions:—C. S. Staddon, W. J. Webster, (Bt. Major) B. Shires (granted the rank of Major). Captains retaining the rank of Captain: A. K. Gibson, R. Isbister, R. C. Davenport, I. Aubrey, J. B. Leigh, H. B. Dykes, A. E. Jenkins, J. S. White, W. J. Harvey, A. W. Smith, A. F. Cook (since deceased), W. Williams, P. Shillito, G. E. Tilsley, T. A. Butcher, A. C. Hill, A. Bullied, H. J. Parish, E. B. Hickson, G. F. Mitchell, W. Adams, W. A. Jackson, J. S. McL. Gray, J. A. Martin, A. Blackstock, R. P. Jack, W. L. Yell, K. J. A. Gillanders, A. S. Westmorland, E. D. Spackman, J. A. Dawson, A. G. Shurlock.

TERRITORIAL FORCE.

Major J. M. Gover to be Lieutenant-Colonel and to command 1st Northern Casualty Clearing Station.

Major (acting Lieut.-Col.) R. B. Purves relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. T. S. Elliot to be Deputy Assistant Director of Medical Services, North Midland Division.

Capt. J. A. Henderson vacates the appointment of Deputy Assistant Director to Medical Services.

Capt. J. D. C. Swan to be Major.

Capt. J. E. Lascelles is restored to the establishment.

Capt. I. J. Williams (late temp. Capt., R.A.M.C.) to be Captain.

Capts. W. M. Cox, J. A. Sellar, and F. A. Dick resign their commissions and retain the rank of Captain.

1st Scottish General Hospital: Capt. G. Stuart is restored to the establishment.

INDIAN MEDICAL SERVICE.

Capt. W. P. Hogg to be acting Lieutenant-Colonel while commanding a Combined Casualty Clearing Station.

Majors to be Lieutenant-Colonels: C. W. F. Melville, (Bt. Lieut.-Col.) R. McCarrison, J. Masson, E. W. M. Anderson, (Bt. Lieut.-Col.) W. H. Leonard, (Bt. Lieut.-Col.) A. W. C. Young, J. G. G. Swan, R. McL. Dalziel, Shaik Abdur Ruzzak, (acting Lieut.-Col.) R. B. B. Foster.

The King has approved the relinquishment of his commission by Temp. Capt. J. M. Guilfoyle.

THE HONOURS LIST.

The following appointments to the Most Excellent Order of the British Empire, for services in or for certain of the Overseas Dominions, and in connexion with the war, are announced:—

C.B.E.—Lt.-Col. H. E. H. Russell, Principal Medical Officer, South Australia.

O.B.E.—Mr. C. T. Anderson, Vocational Training Board, Capetown.

M.B.E.—Dr. L. Fourie, Medical Officer, South-West Africa.

FOREIGN DECORATIONS.

French.

Légion d'Honneur.—Chevalier: Temp. Capt. (temp. Maj.) R. L. Davies, O.B.E., R.A.M.C.

Médaille des Épidémies (en Argent).—Maj. W. A. Thompson, R.A.M.C. (T.F.).

Hedjaz.

Order of El Nahda.—4th Class: Maj. D. G. R. S. Baker, I.M.S.; Capt. F. McKibbin, R.A.M.C. (S.R.).

Roumanian.

Order of the Crown of Roumania.—Commander: Sir W. B. Smith

Serbs, Croates, and Slovenes.

Order of the White Eagle.—5th Class: Brev. Maj. W. B. Purchase, M.C., R.A.M.C.

Order of St. Sava.—3rd Class: Brev. Col. H. H. Norman, R.A.M.C.; Lt.-Col. R. J. W. Oswald, O.B.E., R.A.M.C.(T.F.); Lt.-Col. A. B. S. Stewart, O.B.E., T.D., R.A.M.C.(T.F.); Temp. Maj. (acting Lt.-Col.) H. W. M. Tims, O.B.E., R.A.M.C.; Lt.-Col. Sir N. I. C. Tirard, late R.A.M.C.(T.F.). *4th Class:* Temp. Capt. A. W. Tabuteau, R.A.M.C. *5th Class:* Temp. Capt. E. R. Barton, R.A.M.C.

Obituary.

SAMUEL SLOAN, M.D., C.M. GLASG., F.R.F.P.S. GLASG.,

CONSULTING PHYSICIAN TO THE MATERNITY HOSPITAL AND TO THE HOSPITAL FOR DISEASES OF WOMEN, GLASGOW.

THE death took place on Oct. 17th, in his 78th year, at his residence in Glasgow, of Dr. Samuel Sloan. Educated first at Anderson's Academy and afterwards at the High School, Glasgow, he graduated M.B. at the University, with commendation, in 1866, and proceeded to the M.D., C.M. degrees in 1870. Seven years later he became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow. Specialising in gynæcology and electro-therapeutics, he held the post of examiner both for the University and for the Fellowship examination of the Glasgow Royal Colleges. Among his many appointments were those of President of the Obstetrical and Gynæcological Society of Glasgow and of the Electro-Therapeutic Section of the Royal Society of Medicine, while in 1915 he was President of the Electro-Therapeutic Section of the British Medical Association, then holding its annual meeting at Aberdeen. He was also an Honorary Fellow of the Chicago Gynæcological Society, and an ex-Vice-President of the Glasgow Medico-Chirurgical Society.

Dr. Sloan was a frequent contributor to the medical press. A paper which he read before the British Electro-Therapeutic Society in 1907 on Some Physiological Effects of High-frequency Currents in Disease, and which was published in THE LANCET at the time, led to an interesting correspondence on the subject in our columns, and a paper on Antero-posterior Compression Forceps for Application at Brim of Flat Pelves, read before the Section of Obstetric Medicine at the annual meeting of the British Medical Association held in Glasgow in 1888, was published in the *British Medical Journal* in the following year. His book on "Electro-therapy in Gynæcology," published in 1917, is a valuable contribution to the subject with which it deals, and the methods of treatment which he advocates will probably be more extensively used in the future than they have been in the past. Dr. Sloan was a highly cultured and competent physician.

JAMES LEITH WATERS, M.B., C.M. EDIN.,

SENIOR SURGEON, HULL WOMEN'S HOSPITAL.

Dr. J. L. Waters, who died on Sept. 22nd at his residence in Hull, at the age of 62 years, graduated at Edinburgh University with honours in 1879, when he obtained the Whitman prize in clinical medicine. At that time the science of surgery was undergoing great changes as a result of the introduction of antiseptics by Lord Lister, and Dr. Waters was one of the clerks in the wards of the Edinburgh Royal Infirmary. After graduation he held successively the posts of demonstrator of anatomy in the University under Sir William Turner, house surgeon to Professor Annandale at the Royal Infirmary, and resident physician to the Hertford British Hospital in Paris. For two years he was senior house surgeon at the Cumberland Infirmary, Carlisle. He then commenced practice in Caithness, his native county, and went to Hull in 1890. Here he identified himself not only with the medical institutions, but with the literary and social life of the city. He was a past president of the Hull Medical Society and also of the Caledonian Society when it met in Hull in 1911. At his death he was senior surgeon of the Hull Women's Hospital, with which he had been connected for many years. He was a sound and able operator. Dr. Waters was also a well-read man and had a thorough knowledge of English classics. He was a purist and had a great contempt for looseness and the slang of the present-day English. He had a wide knowledge of French literature, was a keen admirer of French culture and thought, and was one of the founders of the French Cercle in Hull. He was also a past president of the Hull Literary Club, an office which he filled with distinction. Of a lovable personality, Dr. Waters was highly esteemed, especially by his poorer patients. He was a member of the Humber Lodge of Freemasons. The funeral, which took place on Sept 25th, was largely attended by friends and by representative members of the various institutions with which Dr. Waters had been connected.

OUTBREAK OF SMALL-POX AT MIDDLETON.—Twenty-two cases of small-pox of a mild variety and chiefly in children are reported in the Middleton (Lancashire) district. All the cases have been removed to small-pox hospitals in the Crompton and Ashton districts. In addition there are a number of "contacts" under observation. There was a slight outbreak at the end of the summer. The public vaccinator is having a busy time.

Correspondence.

"Audi alteram partem."

THE CALL FOR AN IMPROVED MILK-SUPPLY.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 16th you give a report of the meeting of the National Association for the Prevention of Tuberculosis in which an account is given of the speech which I made. There is one small error made which I should like to be allowed to correct. I did not say that "2 per cent. of cows which to outside appearance are in good health are giving tuberculous milk," but that 2 per cent. of such cows showed the presence of tubercle bacilli in their fæces. Obviously it does not follow that the milk was tuberculous. I am sincerely grateful to you for the report on my speech which you have published, and I shall be glad if you will allow me this opportunity of presenting the case for the milk industry as we see it from within.

The milk industry in the past has suffered from a number of grave disadvantages. Among these may be mentioned that until within the last seven years education, coöperation, and an adequate financial prospect for improved work were lacking to the dairy farmer. As illustrations of these, may I point out that proper methods of milk production were not taught in any dairy school with which we are acquainted. The dairy farmers were isolated entities and very slow to band together to any effective purpose, and the handling of his product remained in the hands of a variety of different bodies whose interests not infrequently appeared to be at variance, with the result that its condition on reaching the consumer was not such as it might have been with greater unity of control. The public was unwilling to pay more than a flat rate for milk, a fact of which I myself have definite evidence, since I have visited medical societies on more than one occasion and have demonstrated the condition of milk as it is and as it can be, and have asked my audiences whether they were prepared to pay for the extra cost. I have never yet received a satisfactory reply, and I have personal knowledge of hospitals which persistently refuse the contract for better milk. In face of these facts it is not difficult to understand the delay in the improvement of our milk-supply which has occurred in this country. Serious steps in this direction, however, have been, and are being, taken within the industry. The dairy teachers have been gathered together and have put forward a new scheme of dairy education in which matters of milk production take their proper place. The dairy farmers have formed a representative council, known as the Associated Milk Producers' Council, which has already produced a valuable scheme for the improvement of the milk-supply. Two of the essentials of the scheme are that the dairy farmers shall band themselves together in districts, be paid for their milk according to its quality, including cleanliness, and have persons in their own employ competent to go in and out of the dairy farms and advise upon improvement of methods. In association with this scheme an attempt is being made at the present time to link up the producer, wholesaler, and retailer, so that their interests in the fate of their milk may be one. All these events represent a great upheaval for the improvement of the milk-supply from within the industry. What is most urgently needed now is that this movement shall receive the sympathetic support of all those who are concerned with public health.

For these reasons I was sorry that when I was at Liverpool I found a great body of public health authorities discussing the production of milk and bovine tuberculosis in the absence of the only people who can really improve the supply or prevent tuberculosis. We ought to have been invited and to have discussed this question together. If that were done I believe that your readers would have been astonished at the amount of help we are willing to give. May I

venture to suggest that the attitude which is taken up by some authorities on tuberculosis as to the advisability or otherwise of allowing children to drink tuberculous milk, and the wild statements concerning milk which are occasionally made at such meetings as that held in Liverpool, add more than these people realise to the difficulties of the situation.

I am, Sir, yours faithfully,
R. STENHOUSE WILLIAMS.

Research Institute in Dairying, University College, Reading, Oct. 18th, 1920.

INFANTILE MORTALITY IN HUDDERSFIELD.

To the Editor of THE LANCET.

SIR,—Pray allow me to point out that in your sympathetic notice of the extension of the work against infantile mortality in this borough you do not correctly reproduce my views on the relative value of the work of qualified and legally registered medical women in this relationship, and the work of other ladies of different training. You "confess to a little astonishment that" I "can see no training other than the full medical course likely to result in producing efficient health visiting." That is not my attitude, but I am satisfied that a medical practicioner can do better work in this field than anyone else. It is not my opinion that every medical woman will make a better health visitor than every lady having other training, but I am satisfied that the more highly trained person is more likely to be the more efficient. This word "efficient" is a relative term, it has no absolute meaning—for example, a shorthand typist taking down 80 words a minute, and typing 25, might properly be described as efficient, but there are shorthand writers who can faithfully reproduce 150 words a minute, and typists who can do 60. The latter are more efficient than the former. My position is that women doctors are more efficient than others in the work of saving infant life and promoting maternal welfare; moreover, I am satisfied that the work is so important and so vital from every point of view that officers of sanitary authorities are justified in advising that the highest efficiency ought to be aimed at.

I desire to pay a high tribute to the excellent work done by nurses and others. I would regret if any action or words of mine seemed deprecatory, but I regard it as my plain duty to secure the best for the borough I serve. I am, Sir, yours faithfully,

S. G. MOORE,
Huddersfield, Oct. 15th, 1920. Medical Officer of Health.

CITY OF BRADFORD ANTITUBERCULOSIS CENTRE.

To the Editor of THE LANCET.

SIR,—There appears to be a growing despondency regarding the efficacy of the antituberculosis measures now in vogue. As the result of eight years' experience in a large industrial city I am now more optimistic than when I commenced my work there, because, as the result of my clinical experience and the preventive measures suggested by the medical officer of health, Dr. J. J. Buchan, an attack is being made on tuberculosis which was producing good results before the war, and now that the war is over, good results are again coming to the fore. We have a sanatorium for *early curative cases* only, and some magnificent results have already been obtained. In common with all other areas the weakness of our after-care allows a certain number of preventable relapses, but the future will strengthen that weakness.

The strongest point of our scheme is that we endeavour to isolate the advanced infective cases, as far as is practicable, in hospital, the high death-rate of these institutions not being considered, in contradistinction to that of the sanatorium. In my opinion, a high institutional death-rate should not be deprecated as it makes a low death-rate in the homes possible. The isolation of these infective cases prevents them working in factories. If it is impossible to obtain isolation in hospital, we endeavour to get isolation in the homes. By working on these lines good results have already been obtained, and I firmly believe that if it were possible to obtain *compulsory removal* and *isolation* of all cases of infective tuberculosis in the slum areas our results would be far better than at present. The time is not yet opportune for pushing that important point, but it will come in the future when its value is fully appreciated.

I am, Sir, yours faithfully,
HAROLD VALLOW, M.D., D.P.H.

Bradford, Oct. 15th, 1920.

BACILLARY NEPHRITIS.

To the Editor of THE LANCET.

SIR,—I regret that any misapprehension may have been caused by the occasional omission of the hyphenated part of the word guinea-pig in my recent paper on nephritis. The experiments were all performed on guinea-pigs and white rats. I take this opportunity of mentioning a point of interest omitted in the original article—viz., the cyto-diagnosis of acute nephritis. In all the uncomplicated cases of bacillary nephritis the "pus" cells found free or enclosed in casts in the urinary sediment showed a large predominance of the mononuclear type, chiefly lymphocytes. On the other hand, an exudation of polynuclear leucocytes has been reported as a characteristic of a nephritis following septic conditions and as an early sign accompanying peri-renal inflammation from the same cause. I am, Sir, yours faithfully,

Cairo, Oct. 4th, 1920. H. B. DAY.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE Autumn Session of Parliament, which opened on Tuesday, Oct. 19th, promises to be an arduous and important one. The Government have at the outset taken the whole of the time in the House of Commons, and apart from the consideration of a large number of first-class measures, there are likely to be discussions on many questions of pressing national interest. Several Bills relating to medical and health matters, which were held up during the summer recess, will receive further consideration. Among these are the Patent Medicines Bill, which originated in the House of Lords, the Criminal Law Amendment Bills 1 and 2, the Sexual Offences Bill, and the measure formally introduced by Dr. ADDISON, the Minister of Health, on the eve of the adjournment in August, the purpose of which is to enable county councils and borough councils, if they think fit, to contribute to the maintenance of the hospitals. The Milk and Dairies Bill, too, raises issues of great importance from the point of view of public health. The long-delayed Bill to give effect to the recommendations of the Dental Committee is also expected to be introduced at an early date. There was some hope earlier in the year that Dr. ADDISON would be in a position to bring in his promised measure for dealing comprehensively with the whole of the medical services of the country, but in view of the extreme pressure of business in other directions the chances of this Bill being passed this year are regarded as remote.

BOOKS, ETC., RECEIVED.

CROSBY, LOCKWOOD, AND SON, London.
Every Man His Own Builder. A Book for Everyone Who Owns a Piece of Land. By G. G. Samson. 3rd ed., revised. Pp. 350. 15*s*.

KEGAN PAUL, TRENCH, TRUBNER, AND CO., London. DUTTON, E. P., AND CO., New York.
The Human Atmosphere (The Aura). By W. J. Kilner, M.B. Cantab. Pp. 300. 10*s*. 6*d*.
Phenomena of Materialisation. A Contribution to the Investigation of Mediumistic Teleplastics. By Baron von Schrenck-Notzing, Practising Physician in Munich. Translated by E. E. Fournier d'Albe, D.Sc. Lond. and Birm. Pp. 340. 35*s*. net.

LEWIS, H. K., AND CO., London.
Elements of Practical Medicine. By A. H. Carter, M.D., M.Sc. Pp. 696. 16*s*.
The Principles and Practice of Roentgenological Technique. By I. S. Hirsch, M.D. Pp. xx + 224. 60*s*.

LIPPINCOTT, J. B., Co., Philadelphia and London.
Principles and Practice of Operative Dentistry. By J. S. Marshall, M.D. 5th ed. Pp. 711. 35*s*.

LONGMANS, GREEN, AND CO., London.
School Hygiene and the Laws of Health. A Text-book for Teachers and Students in Training. By C. Porter, M.D. 5th ed. Pp. 361. 6*s*. 6*d*.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The quarterly Council meeting was held on Oct. 14th, with Sir Anthony Bowlby in the chair.—The President reported that the preceding President had appointed, on behalf of the College, Mr. J. Herbert Parsons, Dr. H. Willoughby Lyle, and Mr. E. Treacher Collins as examiners for the diploma in ophthalmic medicine and surgery, and Sir Frederick Mott as an examiner for the diploma in psychological medicine. These appointments were confirmed.—A report was read from the secretary respecting candidates found qualified for the diploma of Member, and two diplomas were granted.—A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in tropical medicine and hygiene, and 13 diplomas were granted.—A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in ophthalmic medicine and surgery, and 10 diplomas were granted.—It was decided "that the best thanks of the Council be and are hereby given to Sir Rickman Godlee for presenting to the Museum a series of 100 stereoscopic X ray plates of clinical subjects."—In pursuance of the recommendation of the Jenks Scholarship Committee the Council nominated Mr. Rupert Hadley Scott, formerly of Epsom College, as the twenty-eighth scholar.—Mr. J. E. Lane was re-elected a member of the Committee of Management.—The President reported that the Thomas Vicary lecture on the Education of a Surgeon under Thomas Vicary would be delivered by Sir D'Arcy Power on Thursday, Nov. 11th, at 5 P.M., and that the Bradshaw lecture on the Surgery of the Diseases of the Spleen would be delivered by Sir Berkeley Moynihan on Monday, Dec. 6th, at 5 P.M.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examinations:—

THIRD EXAMINATION.

Wilson Osmund Rodrigo, James Maxton McInnes, Dinbai Jehangeer Dubash, Daniel Rossouw Cilliers, Frank Walwyn, Peter Edwin Malloch, James Hamilton Dobbin, and Marguerite Martha Isobel Swanson.

Pathology.—Irene Ward, Henry Gerald Frederick Cubitt, and William Alexander Rankin.

Materia Medica.—William Paris, Thomas Pennington Bremner, Thomas Tarrant Hoskins, Patel Shankerlal Hathibhai Masters, and George Hamilton Dobbin.

FINAL EXAMINATION.

Sylvia Ethel Aldous, Wells Allen Ruble, John Pringle Crichton, Cedric Holmes, William Wolfe Glucksman, Austin Furniss, William Frederick George Radford, Hendrik Jacobus Louw, Kathleen Eleanor Hyde Rutherford, Chepad Sangar Govinda Pillai, Veeravagu Kathiravelu Paramanayagam, Dorothy Mary McCullagh, Andrew Wood Smith, and Donald Mackay.

Medicine.—John Bain Macdonald, Henry Godfrey FitzMaurice, John Murray, Arthur Cuthbertson, Parasurama Parthasarathy, John Bertram van Cuylenburg, Francis Xavier Hendellan Hayes, Gracie Olwen Davies Evans, Walter Granville Carew, and Peter Fraser Fairley.

Surgery.—Alandur Tirumalaiya, John Bain Macdonald, and Joseph Black.

Midwifery.—Alandur Tirumalaiya, Herbert Brown, Parasurama Parthasarathy, Joseph Black, John Bertram van Cuylenburg, Gwilym ap Vychan Jones, Francis Xavier Hendellan Hayes, and Gracie Olwen Davies Evans.

Medical Jurisprudence.—William Bethune Stott, Gerrit Johannes Lamprecht, Adriaan Vintcent Bergh, Ian Fleming McAsh, Alan Wilson Hart, Dominic Ciantar, William Alexander Blyth Clark, Sidney Sack, Frank Walwyn, James McNie Campbell, Arthur Cuthbertson, Raymond Levey, Herbert John Appleyard, Dinbai Jehangeer Dubash, William Dunsmore Oswald, William Gray, and Jane Copes.

NATIONAL BABY WEEK COUNCIL.—The annual general meeting will be held at Armitage Hall, 224, Great Portland-street, London, W., on Tuesday, Oct. 26th, at 3 P.M., under the presidency of Viscountess Rhondda. An address will be given by Mr. H. O. Stutchbury, Assistant Secretary, Ministry of Health, on the Future of Infant Welfare Work and What Baby Week Can do to Promote It, followed by a discussion in which Sir James Cantlie, Dr. Elizabeth Sloan Chesser, and Mrs. H. B. Irving have promised to take part. The following resolution, proposed by the Village Councils Federation, will then be presented by Miss Churton, Secretary to the Rural Housing Association:—

"That this meeting of the National Baby Week Council desires to call the attention of the Minister of Health to the general lack of provision in villages for the disposal of refuse and night-soil, which constitute a grave danger to the health of children, and urges that pressure should be brought to bear on local authorities to deal with the matter in their district."

Tickets (free) may be had on application to the Secretary, National Baby Week Council, 5, Tavistock-square, London, W.C.1.

UNIVERSITY OF LONDON.—An elementary course of 20 lectures on Practical Statistics will be delivered by Miss E. M. Elderton in the Department of Applied Statistics of University College, on Mondays and Thursdays, at 4.30 P.M., beginning on Oct. 25th. The course is suitable for those desirous of obtaining an elementary knowledge of the methods of modern statistics. The fee is £2 2s., and applications for tickets of admission should be addressed to Mr. Walter W. Seton, University College, Gower-street, London, W.C.1.

UNIVERSITY INTELLIGENCE.—To the professorship of midwifery held by the late Sir John Byers at the University of Belfast has now been added the subject of Infantile Diseases, while a second chair to deal with Gynæcology has been created. In the same University Sir William Whitla, M.P., will be granted the title of Emeritus Professor in recognition of his long and valuable services as professor of materia medica, of his many contributions to the advance of medical science, and of his signal services as Member of Parliament for the University.

Prince Arthur of Connaught, the new Governor-General of South Africa, has appointed Captain Russell Wilkinson, R.A.M.C., to his staff as medical officer.

HUNTERIAN SOCIETY.—The presidential address on Stasis and the Prevention of Cancer will be delivered on Wednesday, Oct. 27th, at 9 P.M., at 13, Upper Wimpole-street, London, W., by Dr. A. C. Jordan. All Fellows are invited to attend.

MEDICAL SOCIETY OF LONDON.—A meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W., on Monday, Oct. 25th, at 8.30 P.M. A discussion on the Determination of Degree of Renal Function will be introduced by Professor J. B. Leathes, F.R.S., followed by Dr. Langdon Brown, Mr. Thomson Walker, Mr. Frank Kidd, Dr. H. MacLean, and Dr. W. H. Willcox.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: TUBERCULOSIS GROUP.—The first ordinary general meeting of this society will be held at the National Institute of Medical Research, Mount Vernon, to-day (Saturday), Oct. 23rd, at 11 A.M., when Dr. Leonard Hill will read a paper on Open Air Treatment and Metabolism, illustrated by laboratory methods of research.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on Oct. 6th, Professor R. B. Wild, the President, being in the chair. Dr. R. C. Holt read a paper entitled, "Sunlight as a Cause for Disease." Dr. L. Savatard read a paper on Diagnosis of Early Epithelioma of the Skin, illustrated by numerous lantern slides, in which he drew attention to the absence of illustration of early lesions in either dermatological or surgical text-books. He dealt with the differential diagnosis from rodent ulcer both from the clinical and from the pathological aspect. Professor Wild showed photographs of cases of Acanthosis Nigricans, Actinomycosis, and Unilateral Multiple Nævi.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—Founder's Day will be celebrated at the National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C., on Nov. 2nd, when the wards will be open for inspection from 3 to 6 P.M. Earlier in the year it was thought that it would be necessary, temporarily at least, to close the in-patient work. Owing to a grant of £4000 from King Edward's Hospital Fund for London and other encouragement, this step was averted, but at the present time the Board has only sufficient income to carry on seven wards instead of ten. It has been necessary to extend the system of payments by patients, but owing to the fact that many of the patients are not themselves among the classes earning large wages, this system cannot be applied very rigidly in all cases. It is, therefore, as essential as ever to raise a considerable annual sum in donations and subscriptions.

BRITISH ORTHOPÆDIC ASSOCIATION.—The annual meeting will be held in London on Nov. 12th and 13th under the presidency of Sir Robert Jones. On Nov. 12th the Association will meet at the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., at 9.30 A.M., when the President's address will be delivered and a discussion on the Operative Treatment of Osteo-arthritis of the Hip-joint will be opened by Mr. D. McCrae Aitken. At the afternoon session papers on the following subjects will be read: The Electrical Treatment of the Foot, by Mr. G. Murray Levick; Fractures Occurring in Bone Grafts, by Mr. S. Alwyn Smith; Cysts of the External Semilunar Cartilage, by Mr. R. Ollerenshaw; and the Treatment of Stiff Metacarpo-phalangeal Joints, by Mr. J. A. Dickson. On Saturday, Nov. 13th, at 9.30 A.M., a demonstration will be given by Mr. R. C. Elmslie at St. Bartholomew's Hospital. The Association dinner will be held at 7.30 P.M. at the Royal Automobile Club, Pall Mall, on Nov. 12th.

QUEEN'S HOSPITAL FOR CHILDREN, HACKNEY.—The annual report of the hospital shows that the institution is carrying out exceedingly useful work, although it has not escaped the difficulties under which so many hospitals are now labouring. The committee have decided that they must close the two largest wards (62 beds) unless they can pay off their debt of £7000 odd and also see good prospects of substantially increasing their income within a reasonable time. Meanwhile the out-patient department becomes more and more overcrowded, and its extension is urgently needed.

GREAT NORTHERN CENTRAL HOSPITAL APPEAL.—In connexion with the Progress Fund inaugurated by the Prince of Wales on behalf of the Great Northern Central Hospital, a meeting was held at the London Mansion House on St. Luke's Day, Oct. 18th, under the presidency of the Lord Mayor. Referring to the urgent needs of the hospital, which requires £15,000 to pay off debt, £14,000 for additional cost of maintenance before the end of the year, and £3000 for structural repairs which have stood in abeyance during the war, the Lord Mayor pointed out that the institution was the largest general hospital in North London, and was vitally needful to the population. Mr. G. B. Mower White, F.R.C.S., said that, apart from the money urgently needed to discharge present liabilities, £65,000 were required yearly. The sum of £630 was collected during the meeting. A "League of the Roses" meeting in support of the hospital, which has received £500 from the Alexandra Day Fund, will be held at the Islington Town Hall on Oct. 26th, at 3 P.M.

LONDON HOSPITAL OLD STUDENTS' DINNER.—Lord Dawson of Penn presided at the annual dinner of the old students, which was held at the Trocadero Restaurant on Oct. 15th, with over 260 present. The chairman remarked that this first reunion after the war was domestic and not public, and that as the number of toasts was diminished more time remained for friendly intercourse. The three toasts—The King, H.M. Queen Alexandra (President of the hospital), and the London Hospital—were all given by Lord Dawson, who coupled the house committee and the visitors in the latter. He referred feelingly to those who fell in the war, including colleagues, sisters, nurses, and members of the lay staff, and wisely extended the outlook to an even wider horizon—viz., to those who stayed in England but fell victims to their devoted labours—elderly men who had earned repose, but in the emergency returned to arduous duties, many at the cost of health and sometimes of their lives. To these he gave all honour, gratitude, and affectionate remembrance, emphasising how they still appealed to us now "To win the Peace," quoting John McCrae, the distinguished Canadian poet doctor, who himself died for the cause:—

> "To you from falling hands we throw
> The Torch—be yours to hold it high.
> If ye break faith with us who die
> We shall not sleep, though poppies grow
> In Flanders' fields."

He touched lightly but feelingly on the inevitable changes at the hospital, such as the institution of medical and surgical units, the organisation of post-graduate study, the opening of the school to women students; but he assured all that the same spirit still lives, not only in work, but also in play. The same human story unfolds itself—we still love and are loved. He echoed the universal regret that death had claimed Dr. F. J. Smith, the popular "F. J.," who thought so generously and dealt so kindly with all men, and Miss Luckes, who came to the London Hospital in the days when Sarah Gamp prevailed, and who raised the hospital to its high position in the nursing world. He commented on how the war had taught the profession to face new problems with resourcefulness and courage—how, in a sense, we were discovered by the public, and perhaps even discovered ourselves, so that we are turned to more and more by the public for guidance, and our new position will either be strengthened or lost, according as we are ready to play the part expected of us. He proceeded to draw together the scattered threads of medical politics. He pointed out that it cannot be expected that medicine will escape changes that are to be seen in every phase of our national life, changes the products of new aspirations, new needs, and new conditions. It is alike our duty and our interest as a profession to study these changes and to see that we fashion them and not they us. The demand for organised provision to secure health is growing, he said, and child welfare, maternity, school hygiene, tubercle and V.D. clinics show this. Changes there must be, and, if rightly directed, as we if we are wise can direct them, they are sure to lead to greater interest in our work. The London Hospital, always in the van of progress, will lead the way in research, and the production of a doctor who knows not only medicine, but *man*. The proceedings terminated with an entertainment, provided by Miss Bessie Kerr and Messrs. Pitt and Marks.

GLASGOW UNIVERSITY CLUB, LONDON.—A dinner will be held at the Holborn Restaurant on Thursday, Nov. 25th, with Viscount Bryce in the chair. Tickets may be obtained from the secretaries, 30, Seymour-street, London, W.1.

TRINITY COLLEGE, DUBLIN, DINNER.—Under the chairmanship of the Provost of Trinity College, Dublin, the Rev. Dr. J. H. Bernard, a very successful dinner was held in the Adelphi Hotel, Liverpool, on Oct. 18th. There was a large gathering of Trinity College graduates and their friends, and for the first time ladies were present at the banquet. Among the distinguished guests were the Lord Bishop of Liverpool, Professor J. G. Adami, Sir Robert Jones, and the President of the Liverpool Medical Institution. The toast-list was short, the speeches were admirable, and a very agreeable evening was spent.

COLLEGE OF NURSING: GIFT BY LORD AND LADY COWDRAY.—The College of Nursing, of which Sir Arthur Stanley is chairman, was founded in 1916 in order to provide a central organisation representative of nurses and under their own electoral control. It has 19,000 members. Suitable headquarters for the organisation have now been provided by Lord and Lady Cowdray, who have presented the College with 20, Cavendish-square, the house formerly occupied by Mr. Asquith. In addition to examination and lecture rooms there will be a residential club with 20 bedrooms.

ANNUAL MEDICAL SERVICE AT LIVERPOOL.—On Oct. 16th, in St. Luke's Church, the Bishop of Liverpool conducted the annual medical service, which was attended by a large congregation. The collection, which was in aid of the Royal Medical Benevolent Fund, amounted to approximately £50. The Rev. Dr. J. H. Bernard preached the sermon, taking for his text the words, "Keep yourselves from idols." In the course of his remarks he warned the congregation that although the words of his text referred originally to pagan gods, they might be taken as referring also to the fascination of partial images of the truth. He reminded the congregation that both scientists and clergymen had the same interest and aim—the attainment of the realisation of truth. Science and theology no longer repudiated each other, but each had learnt from their long controversies that the mysteries of Nature were not to be explained completely by the researches of the laboratory.

ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—The Lord Mayor of Liverpool has issued an appeal for £100,000 for the support of the above institution, which, founded in 1851, has the honour of being the oldest children's hospital in the country. On July 22nd last the Liverpool Children's Infirmary amalgamated with the Liverpool County Hospital for Children at Heswall, and these two institutions, with the affiliated hospital at Thingwall, constitute the largest voluntary hospital for children in the North of England. The institution at Liverpool has a very large out-patient department. These patients are selected either for treatment in the hospital, or if they require prolonged open-air treatment they may be sent to the Heswall branch. If they are specially weakly babies or children they are sent to the branch at Thingwall. The organisation is therefore singularly complete. The appeal is made specially to further building operations at Heswall, suspended owing to the war, and also to meet the great increase in annual expenditure. Already a sum of about £30,000 has been obtained.

SIR JAMES BARR ON INTUITION.—The winter session of the Liverpool Literary and Philosophical Society was opened on Oct. 6th in the Royal Institution, Colquitt-street. Sir James Barr delivered the Presidential address, taking as his subject the Philosophy of Immanuel Kant, and including an analysis of the higher conceptions of life to which mankind is led by intuition. In the course of the address he observed that intuition had a practical utility which Kant did not appear fully to comprehend, since he seemed to place the human form of it not much higher than the instinct of other animals. Intuition directed us to conceptions of life and consciousness as something more than mere functions of organised matter; yet the interdependence of life and those functions must not be overlooked. The intelligence of many human beings was improved and their lives prolonged by judicious use of the sheep's thyroid. The latter was not food for the soul, but it improved the matter upon which the soul acted. Women were often more sharp-witted, more intuitive, than men, probably because their thyroid glands were as a rule more active. How far the human intellect or the human intuition might yet succeed in unravelling the mysteries of life we could not at present say, but he had no doubt that in the process of evolution the human intellect would be carried to a much higher plane than that to which it had at present attained.

A LAY SERMON AT LIVERPOOL.—Professor Adami, Vice-Chancellor of Liverpool University, addressed the autumn conference of the Liverpool and District Federation of P.S.A.'s, brotherhoods, and kindred societies on Saturday, Oct. 16th. He warned the assembly that although men had every reason to be proud of the discoveries of science, it would be wrong to apply the doctrines and determinations arrived at by science to matters of faith. Speaking of the doctrine of the new birth, he explained how in the regeneration of bodily tissues there is a falling back to a simple state, followed by a growing up to the highly complex. In other words, the tissues were born again. Dr. Adami held that a similar process of development might apply to the spiritual life.

CHIPPING SODBURY WAR MEMORIAL COTTAGE HOSPITAL.—Chipping Sodbury, a small market town in South Gloucestershire, is opening a cottage hospital on funds subscribed partly by the district, partly by the Red Cross Society and the St. John Ambulance Brigade, partly by the Duchess of Beaufort, and partly by the Gloucestershire County Council. Dr. Middleton Martin, the county medical officer, was present at the formal opening by H.R.H. Princess Helena Victoria, and explained how the new hospital would fit in with the scheme of extended medical services now being organised in Gloucestershire.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—The first meeting of this session was held at the General Infirmary, Leeds, on Oct. 15th. A number of interesting cases and specimens were shown, including a specimen of fused kidneys situated in the right renal pouch, exhibited by Professor M. J. Stewart and Dr. S. D. Lodge. The kidneys possessed separate pelves and ureters, the ureter of the lower kidney opening into the bladder in the normal situation of that of the left kidney. The opening address was delivered by Dr. F. H. Mayo, the President, who dealt with some of the advances which had taken place in the practice of medicine during his own experience, and concluded by a reference to some of the problems which confront the profession in connexion with the proposed scheme for public health as outlined in the Interim Report of the Consultative Council. A hearty vote of thanks to the President for his address was passed on the motion of Dr. A. G. Barrs, seconded by Dr. C. Richardson.

CURATIVE TREATMENT OF CRIMINALS IN BIRMINGHAM.—The first results of an instructive experiment in criminology are contained in a report to be presented to the city justices. In February, 1919, the Birmingham justices, impressed by the arguments of the modern school of criminologists that a large number of delinquents need curative and not punitive treatment, began a scheme for dealing with mental inefficients at the prison. To assist the justices in this matter the Prison Commissioners appointed Dr. Hamblin Smith, of Portland Prison, as a resident medical officer at the Birmingham Prison, and the services of Dr. W. A. Potts were also made available. Certain structural alterations were carried out so as to keep the subjects under treatment away from the other inmates. During the period covered by the report 39 cases were selected. Each offender was suffering from impaired mental balance, either from physical unfitness, mental disease, or moral deficiency. The age varied from 11 to 45 years. After diagnosis the majority were either placed in appropriate institutions for methodical treatment or were found suitable employment. Only two cases relapsed into crime, and the latest information about nearly all the others is that they are doing well. Dr. Smith's report is in substance a special plea for the new method in criminology. There is always, he says, some abnormality in a criminal offender, since the ordinary restraints are enough to keep the "normal" man from committing acts against the law. A crime, therefore, is a symptom of disease, the cause of which must be discovered and appropriate treatment applied, which must be individual and personal. After physical examination for defects the offender's former education has to be ascertained, also his mental ability, general and special, apart from regular education; whether he has any abnormal mental functionings; whether he has any important characteristics of emotional or moral life, which may lead to impulsive or otherwise abnormal action; and whether there is anything in his life which may interfere with the healthy working of his mind. The findings in a particular case may be negative, but this fact itself may be of practical use. Besides the attempt to overcome nervousness and lack of confidence by conversations each day a series of mental tests are applied. After suggesting amendments to the Mental Deficiency and Inebriates Acts, Dr. Smith says he is strongly of opinion that the very short sentences still so often given should be made impossible by law. If a man is to be sent to prison at all he should be sent for a period of sufficient length to give reformatory influences a chance.

PAYMENT OF POOR-LAW DISTRICT MEDICAL OFFICERS.—At a recent meeting of the Axbridge, Somerset, board of guardians considerable applause was accorded to a letter from one of the district medical officers to the effect that he considered the salary paid to him was more than was necessary, having regard to the limited number of Poor-law patients needing his services. He would be glad to discuss a modified method of payment, and to this the board replied by referring the whole question of payment of district medical officers to the finance committee.

RIVER POLLUTION IN DEVON.—At the annual meeting of the Teign Board of Conservators, recently held at Newton Abbot, reference was made to the pollution of rivers, and it was stated there was not a river in Great Britain that required more attention than the river Teign. When the salmon left the tidal waters they were unable to face the pollution. "The fish returned to the estuary and were caught on the ebb-tide, which was an unheard of thing. When the fish were caught they were so stupefied that they were practically dead and the nets were a mass of slime." It was remarked that the only way would be to treat the sewage and the discharges from works by septic tanks or some other modern method. Eventually it was resolved to urge the Ministry of Agriculture and Fisheries to bring forward its promised measure to amend the laws relating to the pollution of rivers.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—At the first meeting of this session, after a vote of thanks to the retiring President, Professor I. Walker Hall, his successor, Dr. L. E. V. Every-Clayton, gave an interesting address on Medicine and Surgery, treating of practice from a broad philosophical standpoint. He pleaded for a wider recognition of the general practitioner both as an investigator of disease and its problems and as an all-important unit in the campaign of preventive medicine. He alluded to the need for studying the causes of disease, and in relation to the moral causes argued that there must be some revival of the original "priestly" functions of the profession. After some interesting observations on the trend of surgery and the needs of the professional curriculum, he concluded by the aphorism "La médecine guérit quelquefois; soulage souvent; console toujours." The secretary's report showed a membership of 175 and a credit balance, notwithstanding which the society is likely to be in difficulties unless new sources of income are found. The librarian stated that in the library, which the society shares with the University, there are now 23,000 volumes, while 160 periodicals are received regularly. After a vote of thanks to the officers Mr. Cyril H. Walker was elected President and Mr. S. V. Stock secretary for the ensuing year.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—The ninety-sixth report of this society, presented at the annual meeting held at 15, St. James's-square, London, S.W., on Oct. 15th, contains a satisfactory record, the new life assurances, which exceed anything in the previous history of the society, numbering 2089 for a total sum of £1,791,996. Reassurances were effected to the extent of £141,000, the net new life business amounting to £1,650,996, as compared with £1,185,650 in the previous year. The total premium income was £542,650, showing an increase of nearly £46,000, and the gross interest income rose by £12,057 to £317,271. The claims by death amounted to £296,514, or £71,072 below last year's total. After allowing for depreciation, the assets show a figure of £6,439,750.

DONATIONS AND BEQUESTS.—Dr. George James Robertson, of Kilblean Cottage, Old Meldrum, Aberdeen, formerly a leading medical practitioner of Oldham, Lancashire, and a graduate of the University of Aberdeen, who died in August last, has left personal estate of the value of £38,909. He directed that £1000 be expended for the permanent improvement of the burgh of Old Meldrum, and on the death of certain life-renters the ultimate residue of the estate is to go to the University of Aberdeen in trust for the advancement and practice of surgery.—By the will of Major-General William Edward Marsland, 5th Dragoon Guards, who was resident at Hove for many years, £500 have been left to the Royal Sussex County Hospital, £200 to the Hove Hospital, £200 to the Hospital for Women, West-street, Brighton, and £200 to the Royal Alexandra Hospital for Sick Children, Brighton.—The Edinburgh Royal Infirmary will benefit by some £700,000 under the will of the late Mr. David Ainslie, of Costerton, in Mid Lothian, who directed his trustees to allow certain sums of money to accumulate for a period and then to purchase houses and ground in Edinburgh for the benefit of convalescent patients from the Royal Infirmary. The bequest has now matured.—The late Mr. Edward Parry, of Leamington, has left by will £100 to the Royal Midland Counties Hospital for Incurables, Leamington.

HÔPITAL SAINT-JOSEPH, PARIS.—The work of the oto-rhino-laryngological department, under the direction of M. Georges Laurens and his assistants, MM. Hubert and Girard, began on Oct. 1st with consultations on three mornings a week, and on three others (on Nov. 1st) two clinical courses start; first, an elementary course of nine lectures for post-graduates and students wishing to obtain essential knowledge of oto-rhino-laryngology, and secondly, a course of technique in 26 lectures for post-graduates wishing to specialise.

RETIREMENT OF PROFESSOR WALTER G. SMITH, OF DUBLIN.—Dr. Walter Smith, King's professor of materia medica and pharmacology in the School of Physic, Trinity College, since 1881, has notified the Royal College of Physicians that he wishes to retire from that chair. The chair carries with it the post of physician to Sir Patrick Dun's Hospital. Professor Smith has reached an age when he may reasonably demand a greater degree of leisure than the duties of the chair can permit him, though his friends fail to note any sign of decreasing vigour of mind. During his long tenure of office he has filled a large place in Dublin medicine. An authority on pharmacology, a physician of skill and resource, particularly in his chosen specialty of diseases of the skin, and a devoted student of the latest developments of physics and chemistry, he has brought to his manifold activities a critical acumen and a healthy scepticism which have had a large share in the moulding of the minds of several generations of Dublin students. It is the hope of his many friends all over the world that the leisure he now claims will have the result of sustaining for many years those youthful qualities which have made him the friend of all his pupils.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee, held on Oct. 12th, 31 cases were considered, and £355 voted to 28 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 66, of M.R.C.P. Edin. who practised at Greenwich and died in 1905. Was left at husband's death with house which produces £70 per annum. It has since been mortgaged and is in a bad state of repair, leaving net rent of £32 per annum. Pays £27 per annum for one room. Would willingly undertake employment but finds it impossible to obtain any. One son, aged 36, who is married, with two children, unable to assist her. Voted £18 in 12 instalments.—Widow, aged 36, of L.S.A. Lond. who practised at Assam and died in 1920. Applicant requires a little assistance until her late husband's estate is realised. The estate is expected to realise £1000. Two children, one aged 3 years and the other 10 months. At present residing with father. Before marriage was a hospital sister. Voted £10.—Daughter, aged 68, of M.R.C.S. Eng. who practised in the Isle of Wight and died in 1870. Suffers from chronic chest trouble. Living with an old nurse. Only income £20 per annum from the Royal Hospital for Incurables. Rent 3s. 6d. per week. Fund made grants in 1890 and 1895 of £10 each case. Voted £18 in 12 instalments.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Doncaster and died in 1891. Owing to high cost of living she finds her income, an annuity of £20 10s., and salary as organist £10, inadequate. At present she is living with her brother-in-law. Voted £10 in two instalments.—Daughter, aged 62, of M.R.C.S. Eng. who practised at Doncaster and died in 1891. Suffers from deafness and bodily weakness. Income an annuity of £22 18s., and during the last 12 months £8 by painting miniatures. Does not pay rent as she lives with relatives. Voted £10 in two instalments.—Daughter, aged 69, of M.R.C.S. Eng. who practised at Ongar and who died in 1883. Applicant suffers from cancer, and has had six operations; not strong enough to undergo another which is necessary. Income from other charities £35, and £13 earned by reading to an old lady. Rent 8s. 6d. per week. Voted £18 in 12 instalments.—Widow, aged 72, of M.R.C.S. Eng. who practised in Sheffield and died in 1884. Income, investments, £9. Teaching £20 to £30, letting rooms £40 to £50. Epsom College £30. Her daughter, who used to help, is now out of employment, and applicant has to keep her. Rent £55 per annum. Relieved 18 times, £160. Last time April, 1918. Voted £18 in 12 instalments.—Daughter, aged 57, of M.R.C.S. Eng. who practised in London and died in 1895. Health exceedingly bad and unable to work. She lives with a niece and shares expenses, rent and food. Income, an annuity of £46 per annum. Amount paid for rent and partial board £26. Relieved six times, £40. Voted £10 in two instalments.

Subscriptions may be sent to the honorary treasurer, Sir Charters J. Symonds, C.B., F.R.C.S., at 11, Chandos-street, Cavendish-square, London, W.1.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Oct. 14th, with Sir Francis H. Champneys in the chair. A midwife was struck off the roll, the following charges having been proved:—

Being in attendance at a confinement and the child suffering from inflammation of or discharge from the eyes, and continuing so to suffer, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5); the child being in the condition aforesaid she neglected to hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might immediately be forwarded to a medical practitioner or to an approved institution, as required by Rule E. 20; medical aid having been sought for the said child the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a); she did not take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; and did not keep her register of cases, as required by Rule E. 24.

At a meeting of the Board held later on the same day a letter was considered from the Secretary of the Ministry of Health suggesting that the Ministry might be of some assistance to the Board in connexion with the inspection of midwives in private practice who are approved by the Board for the purpose of training pupils, and stating that the Ministry would be prepared to arrange for such inspection on behalf of the Board by the Ministry's women medical officers and nurse inspectors. The Board decided that the Secretary of the Ministry of Health be informed that the Board thinks that it would be advantageous if the Ministry of Health would, at the request of the Board, send reports by one of its inspectors to the Central Midwives Board. Such reports might concern midwives or institutions already approved or seeking approval. The Board would be glad if the name of the inspector concerned could be given, and that it should be understood that the Board was not necessarily bound by the recommendation of the inspector.—A letter was considered from the honorary secretary of the Ophthalmological Society of the United Kingdom on the question of instruction and the diagnosing and treatment of ophthalmia neonatorum forming part of the curriculum for medical students and midwives, and on the offer of facilities for such instruction made by the Metropolitan Asylums Board. The Board decided that the honorary secretary of the Ophthalmological Society of the United Kingdom be thanked for his letter and be informed that the Board expresses the hope that advantage will be taken of the facilities offered by the Metropolitan Asylums Board for the holding of classes in connexion with the treatment of ophthalmia neonatorum.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DUKES, C. E., M.D. Edin., D.P.H., has been appointed Pathologist and Bacteriologist to the Western Skin Hospital, Hampstead-road, N.W.

HEWER, C. LANGTON, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Anæsthetist to the Queen's Hospital for Children, Bethnal Green.

ROXBURGH, A. C., M.B. Cantab., M.R.C.P., Assistant Medical Officer to the Venereal Department, St. Bartholomew's Hospital.

Great Northern Central Hospital: THOMPSON, D. M., and FRY, L. S., M.R.C.S., L.R.C.P. Lond., House Physicians.

Hospital for Sick Children, Great Ormond-street: MITCHELL, G., Assistant Casualty Medical Officer; COCHRANE, D. J., House Surgeon; TROWER, G. S., M.R.C.S., L.R.C.P. Lond., House Physician.

National Hospital for the Paralysed and Epileptic: BLANDY, MARJORIE A., M.B., Registrar; BARKAS, MARY R., M.B., Resident Medical Officer; MORISON, A. G., M.B., Ch.B., Senior House Physician; SHEPHERD, G. A., M.B., Ch.B., Junior House Physician.

Certifying Surgeons under the Factory and Workshop Acts: WARD, H. W., F.R.C.S. Edin. (Wotton-under-Edge); MANN, A. C., M.B., Ch.B. Edin. (Staines).

Vacancies.

For further information refer to the advertisement columns.

Aylesford, Kent, Preston Hall Colony.—Chief M.O. £1000.

Battersea General Hospital (incorporated), Battersea Park, S.W.—Third Res. M.O. £200.

Bechuanaland Protectorate Government, South Africa.—Two M.O.'s. £400 and £350.

Bedford County Hospital.—Asst. H.S. £150.

Belfast, Royal Victoria Hospital.—Supt. £500.

Bermondsey Infirmary, Lower-road, Rotherhithe, S.E.—Asst. M.O. £475.

Birmingham, City Infectious Hospital, Lodge-road, Hockley.—Asst. M.O. £350.

Birmingham General Hospital.—H.S.'s. and H.P.

Blackburn County Borough.—Female Asst. M.O.H. £450.

Bradford City.—Asst. Bact. £600.

Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Asst. M.O. £200.

Buenos Aires, British Hospital.—Asst. Res. M.O. £450.

Carlisle, Cumberland and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.

Central London Ophthalmic Hospital, Judd-street, St. Pancras.—Jun. H.S. £50.

Colchester, Severalls Mental Hospital.—Locum Tenens, Asst. M.O. 7 gs. weekly.

Colonial Service.—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.

Dartford Board of Guardians.—Female Res. M.O. £250.

Denbigh, North Wales Mental Hospital.—Locum Tenency. 7 gs weekly.

Devonport, Royal Albert Hospital.—H.S. £200.
Durham County Council.—Venereal Diseases M.O. £700.
Edinburgh, Royal College of Physicians Research Laboratory.—Asst. to Supt. £500.
Elizabeth Garrett Anderson Hospital, Euston-road.—Female Sen. Clin. and Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.P. £160.
Glasgow, Lightburn Joint Hospital, Shettleston, near Glasgow.—Res. Phys.-Supt. £350.
Hartshill, Stoke-on-Trent, North Staffordshire Infirmary.—H.P. £200.
Hospital for Sick Children, Great Ormond-street, W.C.—Cas. M.O. £200. Also H.S. £50.
Huddersfield County Borough.—Asst. M.O.H. £500.
Leeds Public Dispensary.—Res. M.O. £200.
Lindsey County Council.—Asst. Tuberc. O. and Asst. Sch. M.O. £550.
Liverpool Eye and Ear Infirmary, Myrtle-street.—Hon. Asst. Aural S. Also Res. H.S. £150.
Lochgoilhead and Kilmorich, Argyll.—M.O. and Vac. £350.
London County Mental Hospital Service.—Sixth and Seventh Asst. M.O.'s. £300.
London Homœopathic Hospital, Great Ormond-street, Bloomsbury, W.C.—M.O. for Electro-Therapeutical Department.
London Missionary Society, 48, Broadway, London, S.W.—Med. Men and Women for India and China.
Maidstone, Kent County Mental Hospital.—Jun. Asst. M.O. £300.
Maidstone, West Kent General Hospital.—Two H.S.'s. £220.
Manchester, Ancoats Hospital, Mill-street.—H.S. £150.
Manchester Children's Hospital, Gartside-street, Manchester.—M.O. and Asst. M.O. £250 and £200 respectively.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, W.—Asst. S. and Clin. Assts.
Mile End Old Town Hospital, Bancroft-road, E.—First Asst. M.O. £500.
Miller General Hospital for South-East London, Greenwich, S.E.—H.P. £150. Also Asst. Anæsth.
Ministry of Pensions, Bellahouston Hospital.—Visiting P. £450.
Ministry of Pensions, Borough of Stepney.—Medical Referee.
Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Chest, Northwood, Middlesex.—Asst. Res. M.O. £200.
National Dental Hospital, Great Portland-street, W.—Med. Supt. £250. Hon. Anæsth.
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. Res. M.O. £200.
Newport, Mon., Royal Gwent Hospital.—Sen. Res. M.O. £250.
Northampton County Borough.—Female Asst. M.O. for Maternity and Child Welfare Work. £500.
Peckham House, 112, Peckham-road, S.E.—Sen. and Jun. M.O.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Prince of Wales's General Hospital, Tottenham.—Hon. Med. and Surg. Registrars. £100 each. Hon. Asst. P. Hon. Anæsthetist. £20.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Res. M.O. £80.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Pathologist. £300. Also M.O. £100.
Queen Mary's Hospital for the East-End, Stratford, E.—H.S.
Rotherham Hospital.—Jun. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Two H.S's. £50.
Salford Royal Hospital.—H.S. and Cas. H.S. £150 each.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. Asst. S.
Seamen's Hospital, Albert Docks.—H.S. £150.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Sheffield Royal Infirmary.—H.S. £150.
Shoreditch Hospital, 204, Hoxton-street.—Third Res. Asst. M.O. £325.
Southern Rhodesian Medical Service.—Several Vacancies.
South Shields County Borough.—Asst. M.O.H. £750.
Surrey County Council.—Female Asst. M.O. £400.
Union of South Africa.—Asst. P.'s for Union Mental Hospital Service. Senior, £625. Junior, £400.
Wakefield, Clayton Hospital.—Sen. H.S. £250. Jun. H.S. £200.
Warwickshire County Council.—Female Asst. County M.O.H. £500.
West Riding County Council.—Sch. Oculist. £550. Also Sch. Med. Inspector. £500.
Western Australia, Lunacy Department.—Sen. Asst. M.O, £504. Also Jun. Asst, M.O. £408.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.
Worcestershire County Council.—Asst. County M.O. £500.

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at St. Andrews, in the county of Fife.

Births, Marriages, and Deaths.

BIRTHS.

ODLING.—On Oct. 13th, at Eskdale, Preston-road, Brighton, the wife of Dr. F. C. Odling, of a daughter.

MARRIAGES.

MACCORMACK—THOMAS.—On Oct. 12th, at the Parish Church, Hunsdon, Herts, C. P. V. MacCormack, L.R.C.P. & S.I., to Margaret Ward, only daughter of Mr. and Mrs. E. W. Thomas, of Hunsdon Bury, Hertfordshire.

DEATHS.

FURNER.—On the 19th Oct., at 13, Brunswick-square, Hove, after a long illness, Willoughby Furner, O.B.E., M.D., F.R.C.S., aged 72. Interment Brighton Borough Cemetery, Saturday, 10.30. No flowers by his request.
SLOAN.—On Oct. 17th, at Royal-terrace, Glasgow, W. (after a brief illness), Samuel Sloan, M.D., F.R.F.P.S. Glasg.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 25th.

ODONTOLOGY (Hon. Secretaries—W. Kelsey Fry, S. F. St. J. Steadman, J. Howard Mummery): at 8 P.M.
Casual Communication by Mr. Montagu Hopson.
Presidential Address:
Mr. W. H. Dolamore: On the Importance of Clinical Observation in Dental Surgery.

Tuesday, Oct. 26th.

MEDICINE (Hon. Secretaries—J. H. Thursfield, E. P. Poulton): at 5.30 P.M.
Papers:
Dr. F. Parkes Weber: On the Differentiation of the Secondary Forms of Polycythæmia Rubra.
Dr. Paterson: Notes on a Case of Transient Polycythæmia in a Child.

Thursday, Oct. 28th.

UROLOGY (Hon. Secretaries—J. W. Thomson Walker, Cyril A. R. Nitch): at 8.30 P.M.
Short Papers:
Sir Thomas Horder: The Treatment of Sub-acute Nephritis by Decapsulation, with an Account of Four Cases.
Mr. Victor Bonney: A New Operation for Nephroptosis.

Friday, Oct. 29th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 8.30 P.M.
Presidential Address:
Dr. A. K. Chalmers: The Function of the Isolation Hospital in a General Scheme of Hospital Provision.
ALTERATION OF DATE.—Will Members please note the above meeting is being held on the 29th October instead of the 22nd.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Oct. 25th.—8.30 P.M., Discussion on the Determination of Degree of Renal Function (introduced by Prof. J. B. Leathes). Followed by Dr. Langdon Brown, Mr. T. Walker, Mr. F. Kidd, Dr. H. MacLean, and Dr. W. H. Willcox.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, Oct. 25th.—5 P.M., Prof. S. G. Shattock: Lipoma.
FRIDAY.—5 P.M., Prof. A. Keith: Malformations of the Rectum, Anus, Vulva, and Vagina.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 25th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 5 P.M., Lecture:—Dr. A. Saunders: Tuberculous Enteritis and Peritonitis (Medical Aspects).
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 5 P.M., Lecture:—Dr. Pernet: Skin Affections in Connexion with Rheumatism.
WEDNESDAY.—2 P.M., Mr. Gibb: Eye Department. 5 P.M., Lecture:—Dr. Simson: Tuberculous Salpingitis (Diagnosis, &c.) and Other Forms of Salpingitis (Gonorrhœal, Septic, &c.).
THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. 3.45 P.M., Special Lecture:—Sir James Galloway: External Manifestations of Visceral Disease (open to all Medical Practitioners).
FRIDAY.—2 P.M., Dr. Morton: X Ray Department. 5 P.M., Lecture:—Mr. Baldwin: Tuberculous Disease of the Intestines and Some Conditions Mistaken for Rheumatism and Allied Disorders. (Lecture III.)
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen.
Daily:—10 A.M., Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Oct. 25th.—2 P.M., Dr. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.
TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Cases and Operations. 2.30 P.M., Mr. C. H. Hayton: Throat, Nose, and Ear.
WEDNESDAY.—2.30 P.M., Dr. W. J. Oliver: Dermatological.
THURSDAY.—2 P.M., Mr. N. Fleming: Eye Out-patients. 3 P.M., Mr. H. W. Carson: Selected Surgical Cases.
FRIDAY.—2.30 P.M., Dr. C. E. Sundell: Diseases of Children. 3 P.M., Mr. Gillespie: Selected Surgical Cases.
SATURDAY.—3 P.M., Mr. H. W. Carson: Surgical In-patients.
Daily:—11 A.M., Mr. T. H. C. Benians: Bacteriological Department. 2 P.M., Operations, In-patient, Out-patient Clinics, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
MONDAY, Oct. 25th.—2-3.30 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Dr. Aldren Turner: Disseminated Sclerosis.
TUESDAY, Oct. 26th.—2-3.30 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Mr. Armour: Surgical Treatment of Spinal Caries.
WEDNESDAY, Oct. 27th.—2 P.M., Lecture: Dr. Hinds Howell: Anatomy and Physiology of the Cerebellum. 3.15 P.M., Lecture:—Dr. Grainger Stewart: Disorders of the Sympathetic Nervous System.

THURSDAY, Oct. 28th.—2–3.30 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Saunders: Examination of the Nervous System and Interpretation of Physical Signs.
FRIDAY, Oct. 29th.—2–3.30 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Taylor: Myasthenia Gravis.
SATURDAY, Oct. 30th.—9 A.M., Surgical Operations.
Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 28th.—4 P.M., Lecture:—Mr. Fairbank: Orthopædic Treatment of Poliomyelitis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, Oct. 25th.—5.30 P.M., Post-Graduate Lecture:—Dr. F. W. Price: Physical Signs of Heart Disease.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 28th.—6 P.M., Chesterfield Lecture:—Dr. K. Sibley: General Principles of Treatment of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
TUESDAY, Oct. 26th.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration VII., The Uses of Dried Milk and Patent Foods.
THURSDAY.—3 P.M., Demonstration VIII., The Management of Difficult Cases.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 26th.—4.30 P.M., Lecture:—Mr. J. H. Ray: Treatment of Cervical Adenitis.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street (behind Whitworth Park).
THURSDAY, Oct. 28th.—4.15 P.M., Dr. A. C. Magian: Medical Treatment of Some Common Gynæcological Complaints. (Lecture III.)

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.
THURSDAY, Oct. 28th.—4.30 P.M., Mr. G. Wright: Chronic Intestinal Obstruction. (At Salford Royal Hospital.)

Communications, Letters, &c., to the Editor have been received from—

A.—Messrs. C. Ash, Sons, and Co., Lond.; Dr. A. G. Auld, Lond.; Association of Certifying Factory Surgeons, Manchester, Hon. Sec. of; Dr. A. Ashkenny, West Bromwich; Association of British Chemical Manufacturers, Lond.
B.—Mr. J. Benson, Dublin; Dr. M. W. Browdy, Manchester; Col. R. J. Blackham, Maidstone; Dr. H. Brown, Lond.; Dr. J. S. Bolton, Nottingham; Mrs. C. Brereton, Lond.; Prof. A. E. Boycott, Lond.; Dr. J. Blomfield, Lond.; Prof. W. Blair Bell, Liverpool; Surgeon Rear-Admiral P. W. Bassett-Smith, R.N.; Dr. A. Balfour, Lond.; British Orthopædic Association, Lond.
C.—Dr. H. P. Cholmeley, Forest Row; Dr. C. Coombs, Bristol; Mr. A. Cooke, Cambridge; Child Study Society, Lond.; Dr. H. S. Cohen, Taunton; Mr. G. H. Clarkson, Glasgow; Mr. P. P. Cole, Lond.; Sir F. Colyer, Lond.; Clerical, Medical, and General Life Assurance Society, Lond.
D.—Mr. A. D. Dyer, Lond.; Department of Scientific and Industrial Research, Lond.; Mr. H. Dickinson, Lond.; Dr. A. G. B. Duncan, West Hartlepool; Deutsche Gesellschaft für Schädlingsbekämpfung, Frankfurt-am-Main; Mr. Ducrot, Paris.
F.—Dr. R. J. Farman, Lond.; Food Education Society, Lond.
G.—Dr. L. Grant, Ballachulish; Great Northern Central Hospital, Lond.; Mr. H. Gardiner, Lond.; Mr. L. M. Gilbreth, Montclair, N.J.; Glasgow University Club, Lond., Hon. Sec. of; Dr. H. T. Gillett, Oxford; Prof. J. Glaister, Glasgow.
H.—Dr. C. O. Hawthorne, Lond.; Dr. C. T. W. Hirsch, Lond.; Dr. J. Haddon, Denholm; Messrs. Handley Page, Ltd., Lond.; Capt. T. C. B. Hooke, Lond.; Messrs. R. Hayes, Lond.; Hunterian Society, Lond.; Hospital for Sick Children, Lond.
J.—Dr. F. H. Jacob, Nottingham.
K.—Prof. A. Keith, Lond.
L.—Dr. R. L. Ley, Great Yarmouth; Leeds and West Riding Medico-Chirurgical Society; Miss A. J. Larcom, Seattle; Mrs. O. Langmead, Lond.
M.—Prof. J. R. Morison, Newcastle-on-Tyne; Dr. S. J. Maher, New Haven; Dr. S. G. Moore, Huddersfield; Mr. J. E. R. McDonagh, Lond.; Dr. J. MacNidder, Hull; Ministry of Pensions, Lond.; Mr. H. Miller, Lond.; Mr. G. Mahomed, Bournemouth.
N.—National Hospital for the Paralysed and Epileptic, Lond.; National Baby Week Council, Sec. of; National Drug and Chemical Union, Lond.
O.—Dr. J. Oliver, Lond.; Dr. F. C. Ormerod, Chorley.
P.—Dr. D. S. Pracy, Atherstone; Dr. B. Pierce, York; Mr. W. H. Pettifor, Lond.; Prof. K. Pearson, Lond.
R.—Royal Mail Steam Packet Co., Lond.; Dr. R. R. Rentoul, Liverpool; Mr. J. M. Redding, Lond.; Mr. R. P. Rowlands, Lond.; Dr. F. Radcliffe, Lond.; Royal National Benevolent Fund, Lond.
S.—Messrs. Siemens Bros. and Co., Lond.; Dr. A. W. Stott, Lond.; Save the Children Fund, Lond.; Dr. H. Scurfield, Sheffield; Dr. H. Sutherland, Paris; South-Eastern Union of Scientific Societies, Lond.; Dr. G. A. Stephens, Swansea; Society of Medical Officers of Health, Lond.
T.—Dr. A. H. Thompson, Lond.; Dr. H. M. Turnbull, Lond.
V.—Dr. H. Vallow, Bradford.
W.—Mr. R. Warren, Lond.; Dr. D. J. G. Wishart, Toronto; Dr. A. Welply, Lond.; Dr. J. D. Wynne, Norwich; Dr. H. Waller, Lond.; West London Hospital Post-Graduate College; Prof. R. S. Williams, Reading.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

MALTHUS AND THE POOR-LAW.[1]

BY JOHN GLAISTER, M.D. GLASG., F.R.F.P.S. GLASG.,
REGIUS PROFESSOR OF FORENSIC MEDICINE AND PUBLIC HEALTH, UNIVERSITY OF GLASGOW.

A LITTLE over a century ago one of the most notable writings on the subject of population was given to the world by Malthus in the form, at first, of a modest essay, entitled the "Principle of Population." A few years later the essay was expanded into a volume, which passed through many editions, occasioned considerable stir not only at the time and for many years thereafter, and may also with truth be said to remain uncontroverted in its main doctrines up till the present time. The object of the book was to test the truth of certain speculations relative to the perfectibility of man and society, to seek the causes which have impeded the progress of mankind towards happiness, and to consider the probability of removing partially or totally these causes in the future.

The Natural Growth of Population and its Restraint.

Malthus laid down the following principles regarding the growth of population:—

1. Population has a constant tendency to increase beyond the means of subsistence;
2. Population, when unchecked, has the power to double itself every 25 years under the most favourable circumstances; and
3. That means of subsistence increases by arithmetical ratio while population increases by geometrical ratio.

His object was to show that: (*a*) population is necessarily limited by the means of subsistence; (*b*) that population increases where these means of subsistence increase, unless prevented by powerful and obvious checks; and (*c*) that these checks and those which repress the superior power of population were resolvable into: (1) vice, (2) misery, and (3) moral restraint; further (4) that it was the duty of the statesman to discourage and diminish the former and to encourage the latter.

The natural checks to excess of population, according to Malthus, were war, plagues, pests, pestilences, epidemics, and famines. He made it perfectly clear and explicit that he used the term "moral restraint" to mean a restraint from marriage from prudential motives with strictly continent conduct during the period of restraint. His definition of this term, therefore, must in no way be confounded with the doctrines of the so-called neo-Malthusian school of the later "seventies," who strangely perverted Malthus's teaching.

The checks which Malthus evidently had in his mind were divided by him into two groups, viz.: (*a*) preventive, and (*b*) positive. The preventive check, so far as it was voluntary, was peculiar to man, and had its origin in the superior reasoning faculties of man, whereby he is able in varying degree according to state of development to calculate and to estimate distant consequences. In a prudent person that check resolves itself into a consideration whether or not the means of support at his command will enable him to enter the married state, and to support any offspring which might result from the marriage. Such considerations are calculated to prevent, if, indeed, they do not actually prevent, many persons in all civilised States from contracting marriage. While it would be true to say that such restraint may produce individual unhappiness, that is slight compared with the evils which an absence of restraint would entail. The positive checks include every cause which in any way or in any degree contributes to shorten the natural duration of life, such as, for example, vice and misery, unwholesome occupations, extreme poverty, bad nursing of infants, excesses of all kinds, all diseases, plagues, wars, and famines. In proof of his contentions that food was the determining factor of increase of offspring, he showed that among peoples low in the stage of human development destruction of children was a consequence of a limited supply of means of subsistence, and that when parents themselves were confronted by and were exposed to privation the children were the first to be made to suffer, and that customs of bodily deformation had been introduced among various tribes of primitive peoples in both sexes to limit or prevent the normal fertility of connubial existence. Indeed, by some philosophers, much more advanced in what we call civilisation, over-population was treated as worthy of drastic measures. Plato, in his ideal republic, suggested that while marriages should not be restricted,

[1] Part of a lecture delivered to the Sanitary Association of Scotland on Sept. 1st.

the offspring of the inferior or least excellent of the married persons should not be reared; and Aristotle declared in favour of excess children being exposed to die, and that no deformed child should be permitted to live. Since the Christian era, however, more clement views have prevailed.

The Poor-laws and the People.

On the early working of the Poor-laws Malthus proclaimed decided adverse views. His opinion, based on observation, was that, although the laws may have alleviated a little the intensity of individual misfortune, they had but spread the evil over a much larger surface; that, notwithstanding the immense sum of money which was collected annually for the poor, all were agreed that somehow or other the relief must have been very ill-managed, and that their distresses were not thereby removed. He made the following prophetic remark:—

"It may at first appear strange, but I believe it is true, that I cannot by means of money raise the condition of a poor man and enable him to live much better than he did before without proportionably depressing others in the same class. ..... During the time of scarcity the greatest sufferers in the scarcity were undoubtedly the classes immediately above the poor; and these were in the most marked manner depressed by the excessive bounties given to those below them."

He affirmed that the Poor-laws of England tended to depress the general condition of the poor in two ways: first, by their tendency to increase the population without increasing the food for its support, and by diminishing the share that would otherwise belong to more industrious and more worthy members of society; and second, in this way by forcing more of the latter class to become dependent. "Hard as it may appear in individual instances," said he, "dependent poverty ought to be held disgraceful." Natural and moral evil, said he further, seem to be the instruments employed by the Deity in admonishing us to avoid any mode of conduct which is not suited to our being and will consequently injure our happiness. On the question of plagues and pestilences he adds most truly:—

"Diseases have been generally considered as the inevitable inflictions of Providence; but perhaps a great part of them may more justly be considered as indications that we have offended against some of the laws of Nature. ..... The human constitution cannot support such a state of filth and torpor; and as dirt, squalid poverty, and indolence, are in the highest degree unfavourable to happiness and virtue, it seems a benevolent dispensation that such a state should, by the laws of Nature, produce disease and death as a beacon to others to avoid splitting on the same rock. ..... In the history of every epidemic it has almost invariably been observed that the lower classes of people whose food was poor and insufficient, and who lived crowded together in small and dirty houses, were the principal victims."

Malthus drew attention to what he believed to be wrong ethically and economically in our action with regard to the poor man.

"Our laws say," he remarks, "that a man has a right to subsistence when his labour will not fairly purchase it, and bind society to furnish employment and food to those who cannot get them in regular market." Here, says he, we are reversing the law of Nature. "No man has any *claim of right* on society for subsistence if his labour will not purchase it. Almost everything that has hitherto been done for the poor has tended to throw a veil of obscurity over the subject and to hide from them the true cause of their poverty." "When," he adds, "the wages of labour are hardly sufficient to maintain two children, a man marries and has five or six. He, of course, finds himself miserably depressed. He accuses the insufficiency of the price of labour, the parish for their tardy and sparing help, the avarice of the rich who suffer him and his to want, the partial and unjust institutions of society which have given him less than his share of the produce of the earth, and perhaps the dispensations of Providence which have assigned to him a place in society so beset with unavoidable distress and dependence. ..... The last person that he would think of accusing is himself, on whom, in fact, the principal blame lies, except in as far as he has been deceived by the higher classes of society. ..... Till these erroneous ideas have been corrected and the language of nature and reason has been generally heard on the subject of population, it cannot be said that any fair experiment has been made with the understandings of the common people; ..... and we cannot justly accuse them of improvidence and want of industry till they act as they do now, that they are themselves the cause of their own poverty, that the means of redress are in their own hands and in the hands of no other persons whatever, that the society in which they live and the government which presides over it are without any direct power in this respect, ... and that they are acting contrary to the will of God, and bringing down upon themselves various diseases which might all, or the greater part, have been avoided, if they attended to the repeated admonitions which He gives by the general laws of nature to every being capable of reading."

Malthus's Theorem put to the Test of Time.

Over a century has now passed since Malthus published his famous essay in extended form, and a century is probably a sufficiently long period in the history of an active nation like ours wherein and whereby to test the truth or otherwise of any man's theories in the realm of political economy. How has his theorem stood the test of time? Within the past recent years a vast amount of information concerning the poorer classes of the nation has been brought together in (1) the Report of the Inter-Departmental Committee on Physical Deterioration of 1903; (2) the Report of the Royal Commission on the Feeble-minded; (3) the voluminous Reports of the Royal Commission on the Poor-laws and Relief of Distress of 1905; (4) Reports of Examination of Army Recruits during the past Great War, not to speak of the illuminating material found in the reports of medical officers of health, sanitary inspectors, Poor-law and Charity Organisation officials, and the accumulated experiences of men and manners during the past hundred years. [Professor Glaister then gave figures showing the extent and development of pauperism in the United Kingdom and in England and Wales during the 15 years 1894–1908, and of the expense entailed thereby.] For example, of the total sum of 37 millions raised from the rate-payers in the United Kingdom for Poor-law purposes in 1906–07, 16½ millions went directly and exclusively to the relief of the poor. This is most discouraging, seeing that in England and Wales alone 20 millions were being spent on education more than in 1841, 13 millions in sanitation and prevention of disease more than in 1841, and that wages in the "nineties" were 10 per cent. higher than in the "eighties" and 30 per cent. better than in the "seventies." Well may the Commissioners in the Majority Report of the Poor-law Commission conclude thus:—

"The statistical review of the expenditure incurred, and the results attained by it, prove that something in our social organisation is seriously wrong, and that whatever may be the evils, they are not of such a nature as to be improved or removed by the mere signing of cheques or the outpouring of public funds."

This is surely a striking corroboration of the conclusion of Malthus of a century before. Malthus declared that the laws of Nature say with St. Paul, "If a man will not work, neither shall he eat," but our law says that though a man will not work yet shall he eat, and though he marry without being able to support a family, yet his family shall be supported, all of which is bound to counteract the intentions of natural law.

THE LEAGUE OF NATIONS AND THE HEALTH OF THE PEOPLES.

THE fact that the Assembly of the Leagues of Nations will hold its first session next month, and will discuss the problem of international sanitation, adds interest to the lecture by Professor F. F. Roget, of Geneva, delivered before the Chadwick Trust at the Surveyors' Institution, Westminster, on Oct. 18th. The lecture, which was the first of three dealing with the Cannes Conference and the programme laid down by the Medical Department of the League of Nations, gave a résumé of the progress made during 1919–20 in the formation of a League of Red Cross Societies, as well as an account of the work to be done by the League of Health working under its direction. The horrors of the last war, said the lecturer, had given the various Red Cross Societies a great opportunity of extending their beneficent work in war-time, and in times of peace it would include promotion of the health and welfare of the peoples, the control and prevention of disease, and the mitigation of suffering throughout the world. In addition, an effort was being made to secure humanitarian conditions of labour for men, women, and children. These benefits to humanity could be secured only by uniformity in work and by the standardisation of remedies. The League of Health would create a moral bond of fellowship among all nations, which Christian charity had failed to do. In the history of mankind the war spirit of the male was dominant, but it was the duty of women to destroy this idea of destruction and women must play their part in the work of the League. An agreement was reached at Cannes that a uniform standard should be applied to the solving of the health problems of the world and that the various sections should form a central bureau of public health. The preventive section alone was composed of 22 members, America sending 5, Great Britain 6, France 4, Italy 5, and Japan 2. There were also sections dealing with child welfare, tuberculosis, venereal complaints, malaria, nursing, and statistics, all composed on an international basis. The Conference, at the head of which was an executive council, met 12 times, and was now crystallised in the office of the Red Cross Societies in Geneva. By its aid the health official of any town would be able to obtain all the information he would require as to cost and plans for giving to that town the best public health organisation, and such a town would reap all the benefits which standardisation could supply. There was also a moral and educative side in the direction of peace on earth in the combined work of the League of Nations and the League of Health. These bodies could supply information as to the evil effects of war, which would be at the disposal of all legislators, while the strict neutrality of the League would tend to dispel the prejudices fostered by national misunderstandings. The Cannes Conference had initiated a Universal Health League designed to embrace all civil life in its world-activities of law, charity, and science.

PIONEER MEDICAL WORK IN THE MALAY PENINSULA.

IN the Malay Peninsula, south of Burma and north of the Straits Settlements, lie the Federated Malay States, administered under the advice of a Chief Secretary to Government, subject to the instructions of a High Commissioner, who is also the Governor of the Straits Settlements (Singapore, Malacca, &c.). In addition, there are the Feudatory or Non-Federated States, in which the rights of suzerainty, protection, and administration were transferred from Siam to Great Britain in 1909. One of this latter group, on the West Coast, lying between 5° 5′ and 6° 35′ N. latitude, is the small State of Kedah (about half the size of Wales), with a population of 250,000 (1911). In 1906 Dr. A. L. Hoops was seconded from the medical service of the Straits Settlements to organise the medical and prison departments in Kedah. At that time, even at Alor Star, the capital, with 10,000 inhabitants, there was no qualified medical man, no hospital, no proper registration of births or deaths, no vaccination. Small-pox was endemic. "The gaol was an overcrowded den, where from one-quarter to one-half of those confined died each year, chiefly from bowel diseases." Happily the successive Presidents of the State Council during recent years and the present Regent have been most enlightened rulers, and have generously and sympathetically supported the efforts towards medical and sanitary improvements in Kedah.

Cholera Outbreaks.

During the eight years 1907 to 1914 there were four outbreaks of cholera, each of them commencing in Alor Star, with approximately 5500 deaths. The water-supply was derived from rivers or shallow wells throughout the country, and is said to have been "especially bad in Alor Star." Native latrines are commonly placed over rivers or streams; also, often near a well and on higher ground; after defæcation ablution is performed at the river or well. Such conditions obviously favour the spread of cholera. In 1914 an impounding reservoir was formed in the hills, from which water was led to the capital and many other towns in North Kedah. Since that year there has been no epidemic cholera in any part of Kedah. Dr. Hoops does not accept the statement, frequent in text-books, that "cholera is always imported," and is convinced that this has not been the case in Kedah.

"There are undoubtedly conditions in Alor Star favouring the life of the cholera bacillus. ..... After the disease dies down the organism may perhaps continue to exist, though harmless, in the soil or water, until a combination of conditions partly unknown to us, but of which drought and bad water are two, cause it to regain its virulence and start a new epidemic."

This progressively increasing (or decreasing) infectivity of successive generations of bacilli is an eminently reasonable explanation of the behaviour of epidemics, not only of cholera but of other specific infections. During inter-epidemic periods the vibrio may persist "in (1) an altered and unrecognisable form (temporarily non-pathogenic) in the earth or water, or (2) in the gall-bladder of human carriers. It is spread largely by the same agencies as typhoid fever—food, fingers, and flies. As regards treatment, elimination by castor oil or calomel was tried in the first epidemic (135 cases, 68·69 per cent., fatal); in the second, morphia hypodermically and permanganate drinks (102 cases, 62·75 per cent. fatal); in the third, similar measures, also intravenous injection of normal saline solution (mortality 64 per cent. in 236 cases); in the fourth, transfusion was not employed in the first 41 cases, of whom 16 recovered (mortality 60·49 per cent.). In the next 192 cases transfusion with hypertonic saline solution was used whenever indicated (mortality 46 per cent.). Later on, in June, of 45 cases so treated the mortality was 51 per cent. Of 23 prisoners attacked in this epidemic, mostly men in previously good health, who received hypertonic treatment, 9 died (39 per cent.), and of these 2 were moribund on admission. The mortality among the whole 278 cases in quarantine camp was 48·92 per cent. "Hypertonic transfusion, therefore, gives much better results than any other line of treatment." The solution used was that recommended by Colonel Leonard Rogers, I.M.S.—in 33 cases by the intravenous, in 54 by the intraperitoneal, and in 56 by both methods.

"The value of the intraperitoneal route is shown by the fact that it was adopted in 28 out of 31 cases, who received 3 pints, and that the mortality in this section was only 35 per cent., although the three intravenous cases died."

Of the 88 total deaths among the 192 cases treated by hypertonic injection 38 were due to uræmia, 33 to collapse, and 6 to diarrhœa. Among many other points touched on in this most valuable article by Dr. Hoops may be noted instances of two cholera attacks in the same person after a few weeks' interval (indicating that the protection afforded is very short), and the tendency of the disease to spread *up*-stream, as had been previously noted by Fox in Perak and and by Sir James Cantlie in Egypt.

HERMAPHRODITES AS PRODIGIES.

To the Editor of THE LANCET.

SIR,—Can any of your readers who are learned in teratology throw any light upon the following matter? There is a fragment of a work by a Latin writer of altogether uncertain date, by name Julius Obsequens, which consists of a list of prodigies occurring during the period of Roman history extending from A.U.C. 564 to A.U.C. 743.

There are a good many instances of monsters—e.g., a pig with human hands and feet, and a child with three feet. But there are seven instances of "androgyni" and one of a woman "inventa duplici natura." The unfortunate "androgyni" were thrown into the sea, generally apparently at birth. One, however, was eight years old, and another ten years. Now what were these "androgyni"? Four of them occurred within 15 years. Hermaphrodites (so-called) are, so far as I know, not at all common.

I am, Sir, yours faithfully,

Forest Row, Oct. 18th, 1920. H. P. CHOLMELEY.

THE CADUCEUS.

To the Editor of THE LANCET.

SIR,—I have looked with interest at Colonel R. J. Blackham's article, the French Medical Service in the Field, in THE LANCET of Oct. 9th. I notice that under the heading of *Uniform* he refers to "the snake of Æsculapius (le caducée)." In THE LANCET of Feb. 7th, 1914, p. 395, I remember having read in a review of *Æsculape* that "Dr. Bailby exposes the confusion of thought in the use of the term Caduceus as descriptive of the emblem of the French military medical service. The rod of Mercury was often, but not always, entwined with two serpents. The badge of Æsculapius is a staff entwined with one serpent. Hence the erroneous application of the term Caduceus (the wand of Mercury) to the staff and serpent of Epidaurus which symbolises Æsculapius." The caducée symbolises concord, the two fighting serpents separated by Mercury's wand.

I am, Sir, yours faithfully,

London, Oct. 13th, 1920. BLANCUS.

MEDICAL WORK IN ASSAM.

AN exhibition of life in the Orient is being held at the City Hall, Cardiff, in aid of a new hospital in Shillong, founded by Dr. H. G. Roberts. Dr. Roberts graduated at Liverpool in 1912 and on going to Shillong the year after, he was so appalled at the inadequacy of hospital accommodation in a district with a quarter of a million population that he decided to find the means for building a properly equipped modern hospital. During the war his services were requisitioned by the Government of Assam, and were recognised by an honorarium of £3000. This sum he made over to the new hospital, and so impressed was the Government by this generosity that it subscribed an additional £4000.

TRANSPLANTATION OF THE TESTIS IN MAN.

IN animals the effects due to removal or hypofunction of the testis can be compensated for by transplantation of the testis, but not by the injection of extracts of these organs. R. Lichtenstern (*Jarhesb. f. artzl. Fortbildung*, 1920) has carried out transplantation experiments on man. An incision is made in the inguinal region and the musculus obliquus exposed, a piece of fascia cleared, and one half of a testis transplanted and fixed by the tunica albuginea with appropriate sutures, the still warm testicular tissue of a healthy man being used. The effects of castration—decline of bodily and mental vigour, paralysis of the hair follicles, disappearance of sexual desire or libido—were completely set aside. Sexual desire returned, the previously feminine bodily characteristics took the male type. In eunuchs hair appeared on the trunk, the axilla, perineum, and extremities; the voice became deeper, the penis and prostate enlarged, and sexual relationship was re-established. These results have so far been observed to continue for five years.

BIOCHEMICAL RESEARCH IN QUEENSLAND.

THE annual report for 1919 of the Australian Institute of Tropical Medicine (Townsville, Queensland) reveals the fact that important investigations in biochemistry are being pursued in Queensland. The biochemist, W. J. Young, gives brief details of the following investigations: the chemical and physical properties of sweat, basal metabolism under the varied climatic conditions prevailing in the country, the skin pigment of natives, and blood-sugar estimations in relation to race and climate. The latter work is of peculiar interest since it tends to show that the normal "fasting" blood-sugar values do not differ from those found in England. Some work on test meals in sprue is also recorded, and the results show that all cases examined exhibit a definite hypochlorhydria. The application of recent methods of analysis to biochemical problems is evidently recognised in Queensland, and we look forward to the publication of these results in an extended form.